

*Illustrated wholesale catalogue  
with prices current of ...*

Eimer & Amend

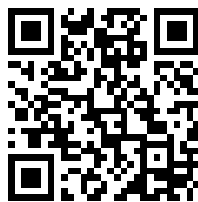
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Established 1851.

1902.

Incorporated 1897.

ILLUSTRATED  
WHOLESALE CATALOGUE  
— WITH —  
PRICES CURRENT  
— OF —  
**Chemical & Physical Apparatus**  
AND ASSAY GOODS.



NEW YORK  
PUBLIC  
LIBRARY



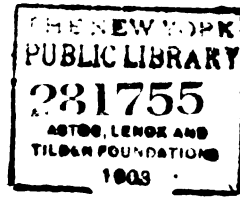
IMPORTED AND MANUFACTURED BY

**EIMER & AMEND,**

205, 207, 209 & 211 THIRD AVE.,

18th St. Station Elevated R. R.

NEW YORK.



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Press of  
**GEORGE G. PECK,**  
No. 117 Chambers St.,  
New York.

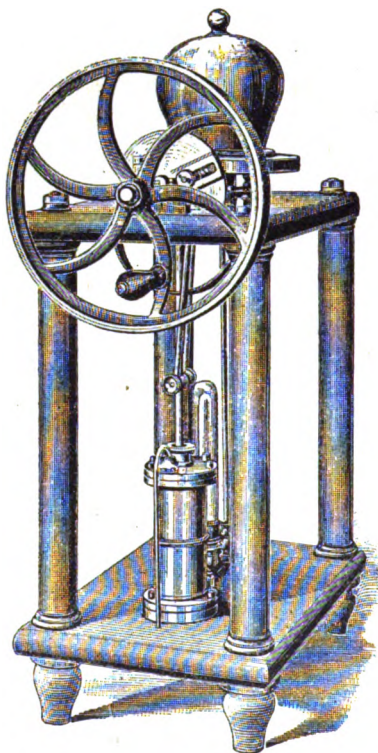
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281755  
J. 1903  
Y. 1903



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9001.

- 9001. **Air pump, Rotary, Elmer & Amend's New Pattern;** a great improvement on the Lever Pump, exhausting rapidly and being much easier to operate; adapted for either hand or power. By a simple contrivance, the length of stroke is adjusted in a moment, a short stroke being preferable to start with, when the most power is required, and the full stroke may be used when vacuum is approached. The pump is of most substantial construction, the metal parts being finely finished, and mounted on a solid mahogany table 36 in. high by 26 in. long by 18 in. wide; cylinder, 10 in. long by 4 in. in diameter, with 8 in. stroke; plate 11 in. in diam.; wheel 18 in. diam. .... \$125 00

## PHYSICAL APPARATUS.

See Pages 262 to 269, and Special Catalogue of Importation.



## INTRODUCTION.

IN publishing this new edition of our Chemical Apparatus Catalogue it gives us pleasure to state to our friends and patrons that, the former buildings proving too small for the rapid growth of the business, we have rebuilt on our old site a substantial seven story, fire-proof building, and have now added an annex. This house, built solely for the requirements of our business, is provided with everything appertaining to it, so that our facilities are now unlimited, enabling us to ship orders very promptly. It will give us pleasure to have purchasers call and examine our stock.

We have fully illustrated and enlarged this list, grouping the modern apparatus in two supplements, in order to make it the most complete of its kind in the United States. The arrangement of this catalogue is mostly alphabetical, but apparatus belonging together have been grouped as much as advisable to enable comparison.

For Chemicals we have provided a special list.

We are

### Agents for

**Messrs. Schott & Genossen, Makers of the famous Jena Laboratory and Normal Glass Ware.**

**Mr. Max Kohl, of Chemnitz, Maker of Highest Grade Physical Apparatus.**

**The Spencer Lens Co.'s Microscopes, Micro-Lenses and Accessories.**  
**Joseph Kavalier's Bohemian Glassware.**

**Carl Zeiss' Microscopes, Objectives, etc.**

**Schmidt & Haensch's Optical Goods, Polariscopes, etc.**

**F. & M. Lautenschlaeger's Berlin Bacteriological Apparatus.**

**Greiner & Friederich's German Glassware.**

**Carl Schleicher & Schuell's Chemically Pure Filter Papers.**

**Baker & Adamson's Chemical Co's Strictly C. P. Chemicals and Acids.**

**E. March's Söhne's German Chemical Stoneware.**

**H. Fleitman's Patent Wrought Nickelware.**

**G. Kern & Sohn's German Balances and Weights.**

**Prof. Jolly's Balances.**

**F. Desmoutis, Lemaire & Co's C. P. Hammered Platinum.**

**Geo. Gruebler's Microscopic and Bacteriological Stains.**

**C. A. F. Kahlbaum's C. P. Chemicals and Tested Reagents.**

We think it important to state that we have been able to reduce, in many instances very materially, the PRICES, and that in making this reduction the quality of the article has not suffered—but, on the contrary, has—wherever possible—been improved. We suggest comparison of our prices with those of other dealers—feeling confident that in this respect they will bear the closest scrutiny.

Being direct Importers and Manufacturers, we feel sure that we can meet any

competition, as we believe that our stock is the largest and best selected of any in this line and buyers will readily realize the importance of thus being able to make all their purchases in one house. We claim to be the only one carrying a full line of non-blistering **hammered Platinum** ware, as also all makes of Balances, and we earnestly solicit a careful examination of the **quality** of our

<b>BEAKERS,</b>	<b>COPPER GOODS,</b>
<b>COMBUSTION TUBING,</b>	<b>GRADUATED WARE,</b>
<b>PORCELAIN WARE,</b>	<b>HORN GOODS,</b>
<b>PLATINUM,</b>	<b>MUFFLES, SCORIFIERS,</b>
<b>WOOD AND METAL WORK,</b>	<b>BALANCES AND WEIGHTS,</b>
<b>FILTER PAPERS,</b>	<b>STONEWARE,</b>
<b>CHEMICALS and ACIDS, etc., etc.,</b>	

which are the best in the market, and which no money could procure of better quality. They are kept in stock at the annexed low prices. Second quality goods we do not deal in. **We may add, that we have increased our facilities for Glass-blowing to such an extent, that we are able to produce any and every piece of glass manufacture, even the most complicated gas apparatus, as perfect and accurate, and at about the same price as made in the best establishments of the kind in Europe.**

**Terms are Net Cash.**

All goods are packed with utmost care by experienced hands in such a manner that everything should arrive safely, which we consider most important.

No charge is made for packing; we charge only for the necessary cases and for those, what they cost us.

**Fragile goods we insure against breakage for 2 to 5% premium, but are not otherwise responsible, after having delivered them in good condition to the Transportation Co.**

Universities, Colleges, Schools and Scientific Societies of the United States are by authority of Act of Congress permitted to have all Preparations, Apparatus, Utensils, Instruments, books, etc., intended for educational purposes and not for sale, imported free of duty. We have special facilities to attend to this, and shall be pleased to receive orders which we fill at the original prices of European dealers.

When articles out of our line are ordered, the greatest care will be used in their selection, but, having been purchased expressly to fill orders, these goods of course, cannot be returned.

**No goods are sent to strangers unless the order is accompanied by proper references or cash. Not less than \$5.00 worth will be sent C. O. D., and that only if at least half cash has been forwarded with the order**

Very respectfully,

**EIMER & AMEND.**

# Eimer & Amend's Prices Current.

○\* 5000. **Absorptiometer**, according to Bunsen.....\$80 00

**Absorption Apparatus**, according to Winkler.

do **Burette**, according to Lunge.

do do do Bunte.

} See Gas Analysis.

And other Absorption apparatus.

\* 5001. **Absorption Tubes**, Bunsen's, with bulb, plain,.... 35 cts. graduated, 1 30

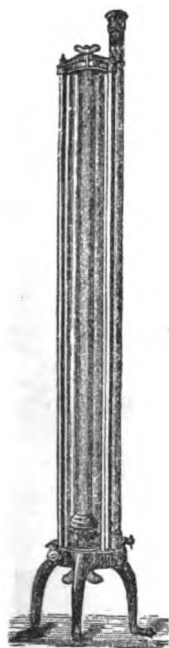
\* 5002. do do do straight, plain. .... 30 cts do 1 00

\* 5003. **Absorption Tube**, according to Soxhlet-Winkler..... 50 cts. each.

\* 5004. **Acetometer**, Otto's, for determining percentage of Acetic Acid in Vinegar, 80 cts.  
Other Acetometers, see Alcalimeters and Hydrometers.

\* 5005. **Acid Bottles**, (Cobalt Bottles), with long stoppers, reaching to the bottom,  
and ground caps. Shape a or b.

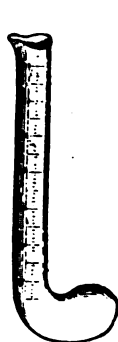
Contents, 1-2	1	2 oz.
.30	.35	.40



5000



5002



5001



5003



5005a



5005b



5004



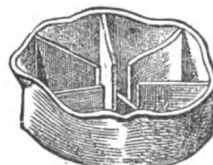
5008



5006



5007



5009

\* 5006. **Acid Bottles**, with **Pipette**, capacity one ounce..... 25 cts.

—\* 5007. **Acid Bottle Ball Stopper**.

1	2 oz.
.40	.45

\* 5008. **Acid Brushes**, made of spun glass, long or short.....25 cts.

\* 5009. **Acid Dishes**, of porcelain.

Diameter,	4	4½	5½	6½ inches.
	.85	\$1 00	1 15	1 40 each.
	3 partitions.	3 partitions.	6 partitions.	6 partitions.

**Acid Jars**, see Cylinders.

**Acid Measures**, see Graduates.

5010. **Acidimeter**, according to Gall, for determining the quantity of acid in must and wine; consisting of a graduated burette, volume pipette and mixing flask, in wooden box; with instructions for use.....\$3 00  
 Ammonia Test Liquor for Acidimeter, per quart, 75 cts.  
 Litmus Tincture for Acidimeter, per pint..... 50 cts.  
 Other Acidimeters, see Alcalimeters and Hydrometers.

— 5011. **Acid Measures**, of lead.

8 oz.	pt.	qt.	$\frac{1}{2}$ gal.	1 gal.	2 gal.
1.50,	2.00,	2.25,	3.00,	4.50,	6.00.

Other Measures see Graduates, Cylinders and Measures.

○\* 5012. **Acid Pitchers**, of stoneware, with 1 handle, from 1 gallon up, also with 2 handles.

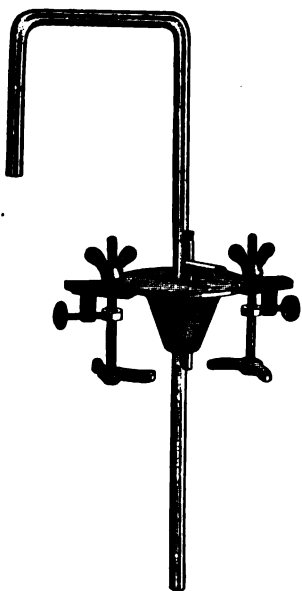
Capacity,	1,	2,	4,	6,	8	pints.		
Price,	.20,	.25,	.30,	.40,	.50c.	each.		
Capacity,	1½,	2,	2½,	3,	4,	5,	6,	gallons.
Price,	.65,	.80,	.95,	1.00	1.25	1.50	2.25	each.



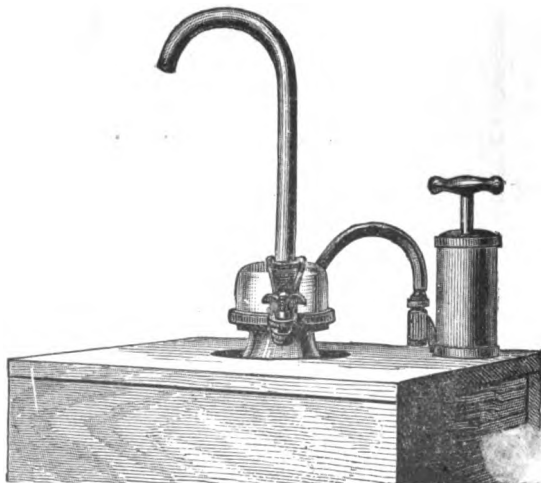
5012



5013



5014



5015

○\* 5013. **Acid Pots**, of stoneware, cylindrical or conical.

Capacity,	4,	5,	6,	$7\frac{1}{2}$ ,	10,	gallons.
Price,	1.40	1.70	2.10	2.60	3.40	each.

- \* 5014. **Acid Pump**, E. & A., to pump Acid or Distilled water from Carboys, substantial and effective. The Liquid is delivered quickly and in a constant stream which can be checked instantly. Size for Laboratories and Stores..... \$4 50  
 Bellows for same..... 4 00

5014a. Ditto, all rubber, same price.

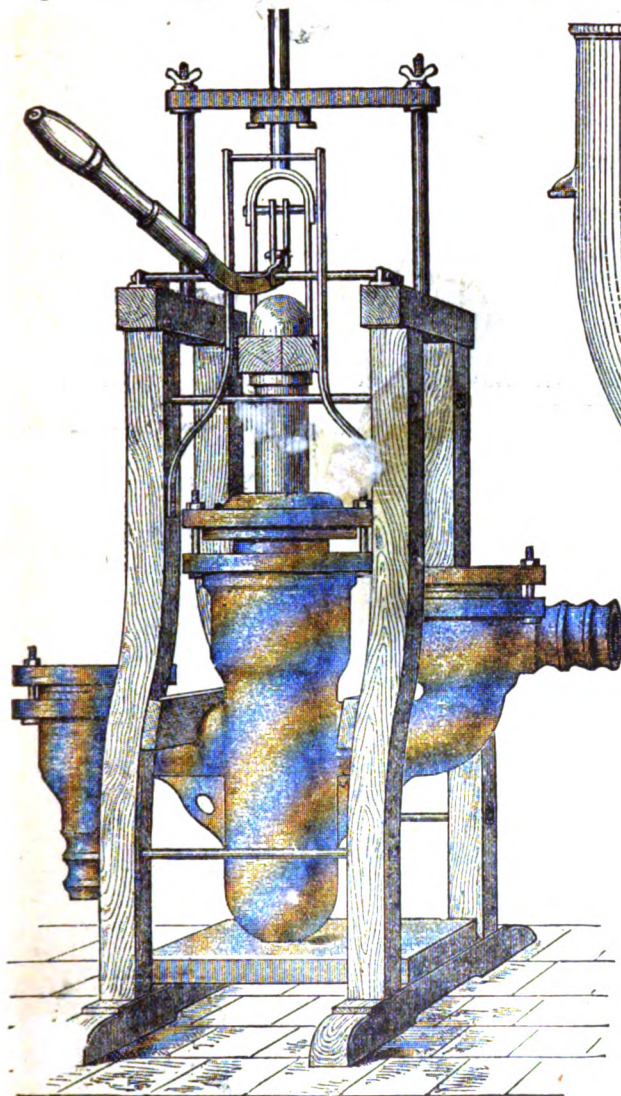
- \* 5015. **Acid Pump**, Matthew's patent, for factory use ..... 12 00  
 Acid Syphons, see Syphons.

## ○\* 5016. Acid Pumps, earthenware, for chemical factories.

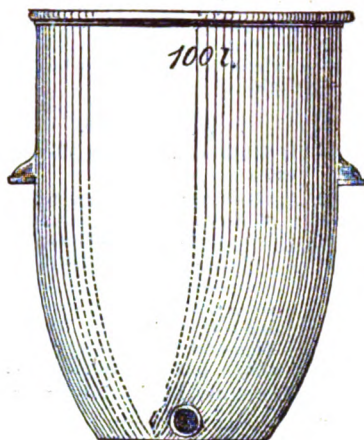
No.	1,	2,	3,
Diameter of Piston,	2 $\frac{1}{8}$ ,	3 $\frac{1}{8}$ ,	4, inches.
Length of stroke,	8,	9,	10, "
Price complete,	58.00,	70.00,	85.00

5016a. Ditto, horizontal action, \$75.00 to \$150.00 extra.

## ○ 5017. Mounting in Wood and Iron, extra to order, at lowest rate.



5016



5018



5019a

5019b

## ○\* 5018. Acid Vessels, with or without outlet near the bottom.

Capacity,	12,	20,	25,	30,	38,	45,	50,	55 gallons.
Price,	3.75,	5.50,	7.50,	9.25,	11.00,	13.00,	15.00,	17.50 each.

Capacity,	65,	70,	75 gallons.
Price,	20.00,	22.00,	25.00 each.

The last three sizes are made to order only. Stop-cocks ground in airtight in outlet if so ordered.

## \* 5019. Adapters, for connecting retorts with receivers, straight or bent, German or Bohemian.

	$\frac{1}{2}$ ,	1,	1 $\frac{1}{2}$ ,	2,	2 $\frac{1}{2}$ ,	3 inches.
	.15,	.20,	.25,	.30,	.45,	.65 each.



**Acolipile**, see alcohol blast lamps.

**Agate Mortars**, see Mortars.

- \* 5020. **Air Bath**, Fresenius, of heavy copper, single walls, front door, two openings on top, draft hole near the bottom, perforated shelf and extra iron bottom. The whole is resting on four legs which can be taken out, to set the Bath upon a stove.

Size, 6x8                      8x10                      10x12 in. Larger sizes to order.

4 50                      6 50                      9 00

- 5020a. Ditto, ditto of aluminum 15x15x25 centimeters.....\$13 50

- \* 5021. **Air Bath** as above, on 4 legs, with extra sliding rod for Bunsen's Burner. The whole is arranged to be fastened against the wall, as well as to stand upon a table.

Size, 6x8                      8x10 inches, Larger sizes to order.  
6.00,                      8.00.

If fitted with Glass or Mica Window 50 cents extra. With burner and fork, \$1 75 extra.

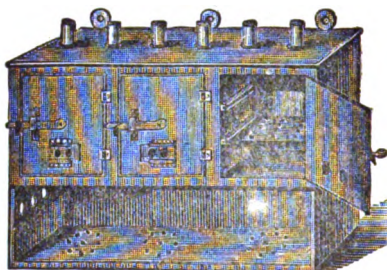
5022. **Air Bath**, made of Sheet Iron, size 6½ inch, by 5 by 6 inch, with sliding front of glass. Price ..... \$ 3 00

- \* 5023. **Air Bath** for drying precipitates etc., made of heavy copper; large size, with 3 drying chambers, separate doors, with registers for each chamber and with movable shelves; the size of the chambers is 7 inch wide by 7 inch deep, and each has 2 tubulations on top, one for the draught, and the other for inserting a thermometer. The size of the whole apparatus is 21 inch long, 8½ inch high and 7 inch deep, resting on an iron support of similar dimensions and shape, but open in front to receive the heating apparatus. Price .....\$20 00

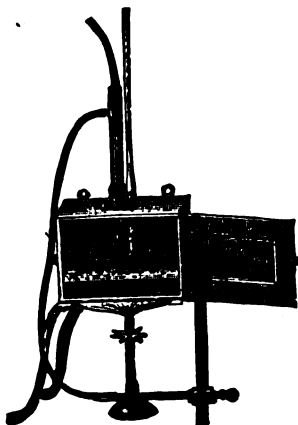
For others, see Drying Ovens.



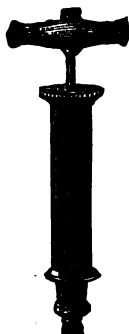
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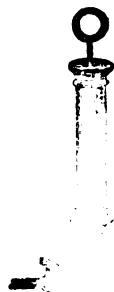
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5021



5024



## AIR PUMPS.

- \* 5024. **Air or Pneumatic Pump**, barrel 8x1½, to exhaust or compress, as required. Price \$1.00 extra) .....

5025. **Air or Pneumatic Pump**, with stop-cock, mounted on a stand, used on the floor or upon a low table.....

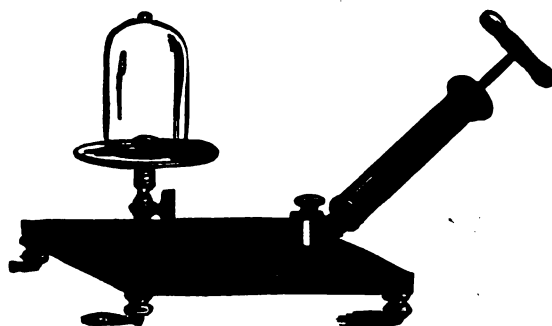
- \* 5026. **Air Pump**, Liebig's, for organic analysis, with stop-cock, used for transferring.....

- \* 5027 Air Pump, barrel of brass, finely finished, 8 in. long, by 1½ in. diameter, with well ground plate, 6½ in. diameter, with stop-cock, set screw and guard screw, mounted on fine polished mahogany base, with qt. bell glass receiver.

Each.....\$15 00

Air Pump, ditto, without stop-cock..... 13 50

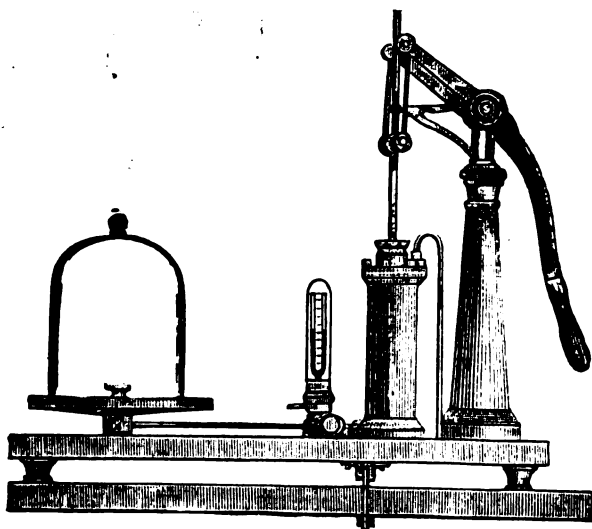
Barometer gauge additional..... 5 00



5027

- 5028. Air Pump, brass cylinder, 8 inches long by 2 inches diameter, plate 9 inches in diameter, polished mahogany base, similar to 5029.....\$26 00

Barometer gauge additional..... 5 00



5029

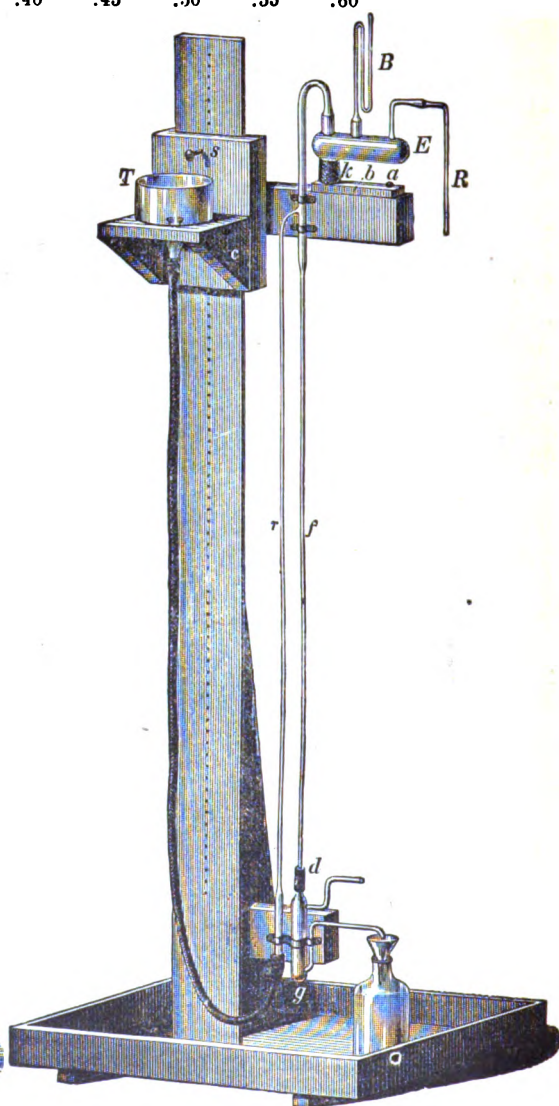
- \* 5029. Air Pump; polished mahogany base and pillar, brass cylinder, 8 in. long by 2½ in. diameter; plate 10 in. diameter; the piston is packed in a manner to prevent leakage with slight friction, the valves are accessible. The cup around the piston should be partly filled with oil to prevent leakage and to lubricate the piston.....\$38 50

Barometer gauge additional..... 5 00

5037. Air Pump, ditto, without the stop-cocks.....	\$20 00
5038. Air Pump, according to Sprengel, exhausting by means of mercury, complete, with support .....	\$8 00
* 5039. Air Pump, ditto, with scale.....	10 00
5040. Air Pump, ditto, glass parts only.....	4 50
— 5040a. Air pump Bulbs,	
4	4½
5	5½
6 inches.	
.40	.45
.50	.55
.60	



5039



5041

- \* 5041. Air Pump, with drying apparatus, adjustable mercury reservoir, etc., **Weinhold's** modification..... \$35 00  
 Air Pump, Bunsen's and Fischer's etc., for use with water. See Filtering Pumps.

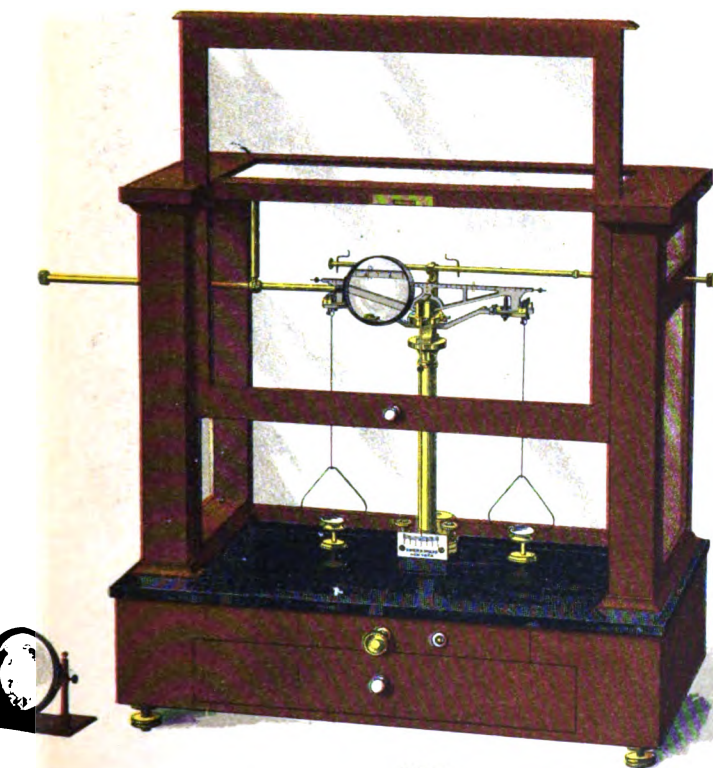
o 9013. **NEW SHORT BEAM ASSAY BALANCE, SENSITIVE TO 1-400 MILLIGRAMME.** We claim for this Balance that it is the best ever offered, combining, as it does, several improvements not to be found on any other, besides being extremely sensitive and also quick-weighing.. The beams, hangers and pans are of Aluminum, while all other metal parts are heavily **GOLD-PLATED**; all knife edges and planes are of agate.

The beam is graduated from the centre into 100 parts on each side, 100 being directly over outer knife edge, and the rider can be used from o point to either end of the beam. Adjustable magnifiers are provided for reading graduations on the beam and Ivory scale. The Balance is mounted on a heavy black glass base plate, which prevents the working parts from being thrown out of adjustment through warping of the woodwork; **IT WEIGHS QUICKLY TO 1-200 MILLIGRAMME** and has a carrying capacity of 10 grammes.

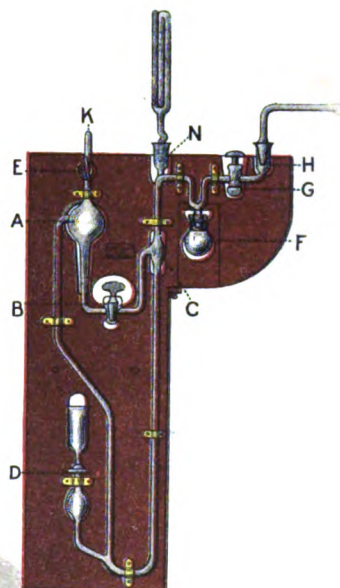
Price, - - - - - \$125.00

- 9013 a. **Finest set of ASSAY WEIGHTS, specially adjusted for above Balance, 10 grammes to 1-10 milligramme and riders.**

Price, - - - - - \$12.00



9013.



9400.

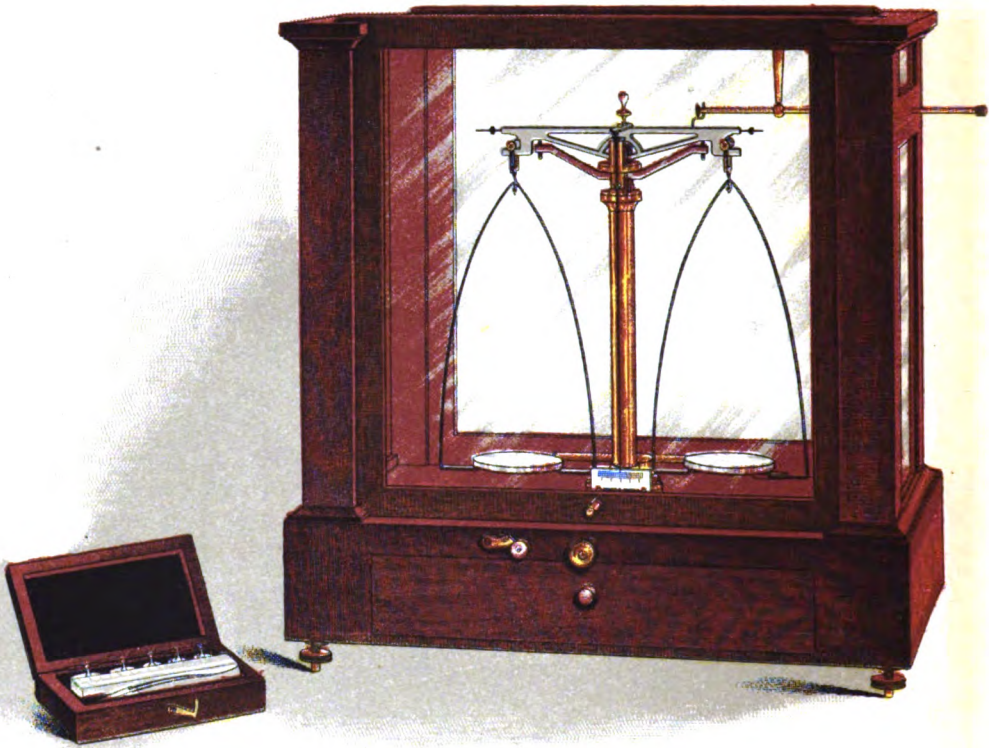
o 9400 **NEW AUTOMATIC AIR PUMP.** Designed by Dr. B. B. Boltwood, Yale University. This pump is simpler and much more compact than any other mercury pump, the total height being 25 inches, while it **REQUIRES ONLY 5 POUNDS OF MERCURY**; it is operated by a small water aspirator (about 25 feet water pressure being sufficient), which keeps the mercury in continuous action and carries off the exhausted air. For nearly every purpose, it is quite as effective as the expensive and complicated Geissler pump, and **WILL EXHAUST A VESSEL OF ONE LITER CAPACITY TO A CATHODE RAY VACUUM IN 25 MINUTES.**

Pump, mounted on polished mahogany support,	- - - - -	\$15.00
Ditto, with vacuum gauge,	- - - - -	20.00
Ditto, " " " and drying chamber for $P_2O_5$ ,	- - - - -	25.00
Metal or Glass Aspirator for Operating Pump,	- - - - -	1.00

NEW

## ANALYTICAL BALANCE, with NON-CORROSIVE WEIGHTS.

This BALANCE combines features which are not to be had in any other balance for the same price.



**O 8630b** SHORT BEAM of ALUMINUM, graduated for rider, with adjusting screws on both ends.

**SENSIBILITY** 1-10th of a milli. with a load of 100 grammes.

**KNIFE EDGES and PLANES** of Agate.

**ARRESTS** for PANS of most improved kind, with automatic stop.

**BOWS and PANS** extra wide, admitting 4" diam.

**CASE** of Mahogany, with glass top; best American workmanship.

The **WEIGHTS** range from 1 milli. to 50 grammes.

From 1 milli. to 0.5, and riders of **SOLID PLATINUM**; the large weights are **PLATINUM PLATED**, making them **NON-CORROSIVE**.

This set will be furnished in a fine mahogany box with **HINGED COVER**, or with **LOOSE COVER**.

The price of **COMPLETE OUTFIT** — balance and weights — is \$60.00, net.

This is the best and least expensive outfit yet offered, and there is nothing in the market equal to it for less than \$100.00.

**EIMER & AMEND,**

**205-211 Third Avenue,**

**NEW YORK.**



## \* 5042. Air Pump plate on triangular base to receive exsiccator and bellglass.

Diameter of plate, 8, 10, 12 inches.

\$6 00, 8 00, 10 00.

## 5043. Air Tester, Wolpert's, in case.....\$3 00

C Reagents for same, put up in capsules, dozen.....3 00

## \* 5044. Air Thermometer Tube.

1 in. 1½ in. 2 in. 2½ in.

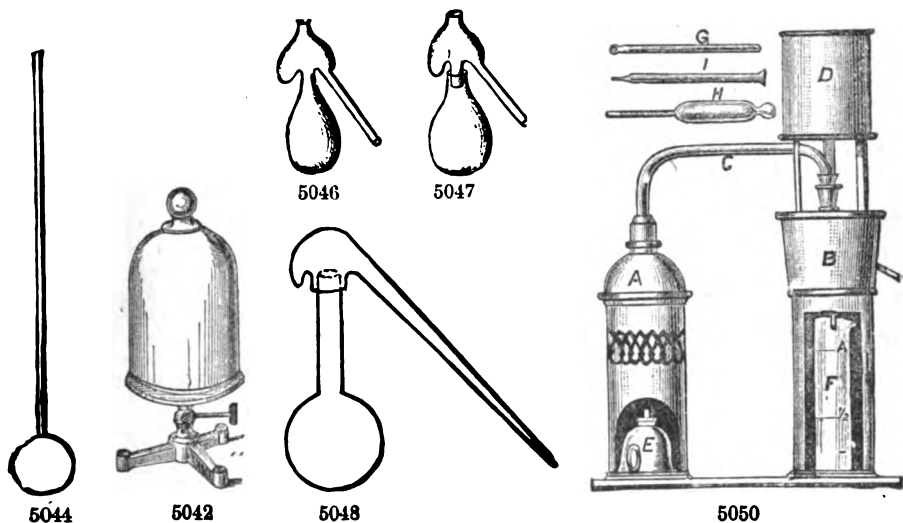
.25, .25, .30, .40.

## 5045. Alcoholometer Manual, with tables indicating the true percentage at all temperatures between 32° and 100° Fahr.....each 25 cts.

Alcoholometers, see Hydrometers.

Alcoholometer Jars, see Cylinders.

Alcohol Lamps, see Lamps.



## \* 5046. Alembics, of thin blown glass, in one piece.

4 oz. 8 oz.

Price, .55. .80.

## \* 5047. Alembics, with head ground on and glass stopper.

4 oz. 8 oz.

.75. 1.00.

## \* 5048. Alembics, of best heavy Bohemian glass, top ground air-tight to the body.

Capacity, 4 ounce, ½ pint, pint, quart,

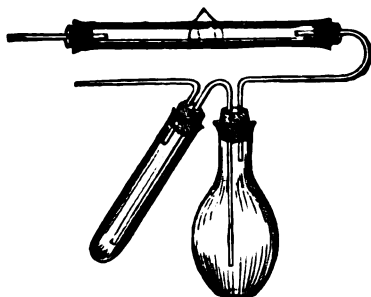
.95 1 20 1 50 1 80

## 5049. Alembic Sallerons, all glass, for determining alcohol in wine, beer, cider, etc., complete with arcometer and graduated glass.....\$ 6 00

## —\* 5050. Alembic Sallerons, of copper, s. c. Monitor still.....9 00

## ALKALIMETERS.

* 5051. Alkalimeter, according to <b>Berzelius</b> .....	\$0 70
* 5052. Alkalimeter, <b>Bunsen's</b> .....	1 00
* 5053. Alkalimeter, according to <b>Fresenius &amp; Will</b> .....	45
* 5054. Alkalimeter, by <b>Kipp</b> , with glass stop-cock.....	1 70
* 5055. Alkalimeter, according to <b>Rohrbeck</b> .....	1 80
* 5056. Alkalimeter, according to <b>Professor Mohr</b> .....	75
* 5057. Alkalimeter, according to <b>Professor Schroetter</b> .....	1 90



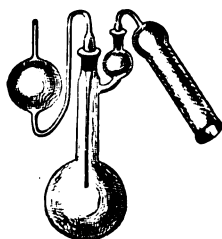
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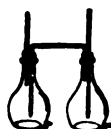
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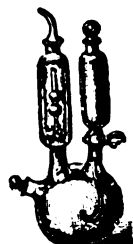
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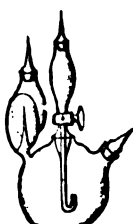
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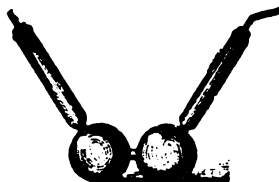
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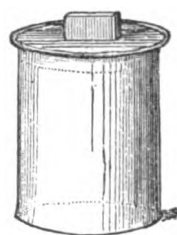
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5061



5062

* 5058. Alkalimeter, after <b>Rose and Geissler</b> with ground tube as stop-cock...	\$1 50
* 5059. Alkalimeter, new form, <b>Geissler's</b> .....	2 00
5060. Alkalimeter, modified by Dr. Chas. U. Shepard, the drying bulbs have ground joint, otherwise like 5059.....	2 00
* 5061. Alkalimeter, <b>Fritsch's</b> for minerals... ..	50

Geissler's, Mohr's, Gay Lussac's, Bink's, etc., see Burettes.

Alkaloids in collections, see Collections and chemical catalogue.

○ 5061a. Amalgamator, hand.....small, \$6 00.	Large, \$8.00
---	---------------

\* 5062. Anatomical Jars, of Bohemian glass, with air-tight ground glass stoppers  
full width of jar. Glass hook inside the stopper to suspend the preparations.

about 2½x2½	3x3	4x4	3x6	6x3	4½x6	8x10 in.
.40	.60	\$1 00	1 25	1 50	1 60	6 00

See also page 385.

—\* 5063. Anatomical jars, of improved style, without contraction at the neck, top plate with hook, ground to the top and made air-tight by a rubber washer and clamp.

Width of mouth.	Height without lid.	Capacity approx.	Each.	Width of mouth.	Height without lid.	Capacity approx.	Each.
2½ inches,	4 inches,	1 pint	\$0.30	5½ inches,	15 inches,	5 quart...	\$1.25
2½ "	6 "	1 "	.35	5½ "	18 "	6 "	1.40
2½ "	8 "	1 "	.40	7 "	8 "	1½ gall....	1.85
2½ "	12 "	1½ "	.45	7 "	12 "	2½ "	2.20
2½ "	18 "	2½ "	.55	7½ "	15 "	2½ "	2.40
3½ "	6 "	1½ "	.60	7½ "	18 "	3½ "	2.60
3½ "	8 "	2½ "	.65	7½ "	24 "	4½ "	3.00
3½ "	12 "	4 "	.75	11½ "	36 "	7 "	5.20
3½ "	18 "	6 "	.90	11½ "	12 "	4½ "	6.25
5½ "	8 "	2½ quart...	1.00	11½ "	18 "	7½ "	7.80
5½ "	12 "	4 "	1.15	11½ "	24 "	10 "	9.40
5½ "	8 "	1 gall....	1.20				
6½ "	12 "	1½ "	1.40				

—5064. Above jars, if provided with perforations in cover, will furnish excellent gas generators or wash bottles.

1 perforation .....	\$ .65
2 " .....	1.50
3 " .....	2.25

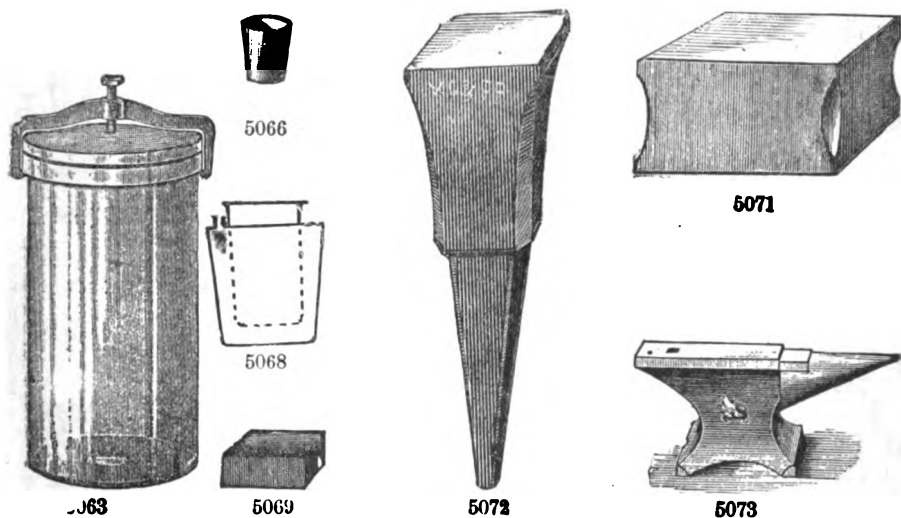
5065. Anemometers, for measuring drafts in furnaces and chambers..... \$25.00

Annealing Cups, U. S. Torrey & Eaton's.....dozen, \$1.75

\* 5066. Annealing Cups, French, very smooth inside. Each, 15 cts. Dozen, \$1.35

○ 5067. Annealing Cups, English.

No.	A.	B.	C.	D.
Diameter on top,	1½	1½	1½	1½
Price, each,	.10	.10	.10	.10
dozen,	1.05	1.05	1.05	1.05



—\* 5068. Anthracen Bath of heavy brazed copper, with silvered crucible of 1 liter capacity.....\$10 00

\* 5069. Anvil, for blow-pipe analysis, Plattner's..... .50

5069a. Anvil, extra heavy..... .60

5070. Anvil, with steel hammer.....\$1 20

\* 5071. Anvils, flat cast steel mirror polished face.

1	1½	2	2½	3	4 inch.
.65	\$1 00	1 30	1 70	2 00	2 60

—\* 5072. Anvils, with point to set in table, mirror polished face.

1½	2	3	4	5	6 inch.
1½	3	7	18	32	44 lbs. per lb. 50 cts.

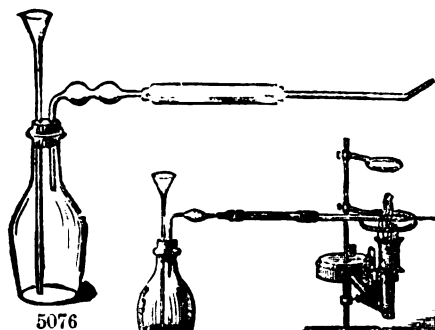
○\* 5073. Anvil, heavy, for use on table.

Length of face,	8	20	30	40	50 lbs.
	5½	6½	1		8½ inch.
	\$3 50	4 00	4 30	4 50	5 00

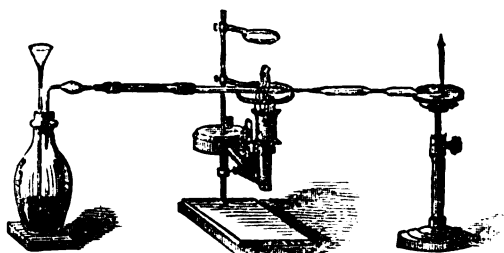
## APPARATUS,

## ANALYTICAL, EXPERIMENTAL, ETC.

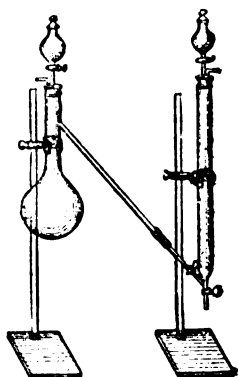
- \* 5074. Apparatus for the detection of arsenic, according to **Marsh**, on polished wooden support, latest form complete with glass stop-cock.....\$2 20
5075. Apparatus, for the detection of arsenic, according to **Marsh**, unmounted, the glass part alone..... .40
- \* 5076. Apparatus, for the detection of arsenic, according to **Fresenius**..... 1 00
- \* 5077. Apparatus, for the detection of arsenic, with Rose's lamp and support table... 7 50
- \* 5078. Apparatus, for the detection of arsenic, according to **Fresenius & Otto**... .60
- \* 5079. Apparatus, for blow-pipe analysis, in polished wooden box, containing ten blow-pipe re-agents, box for platinum wire, pair of forceps, and Plattner's blow-pipe, with platinum plate room for anvil and agate mortar. Complete filled.  
Price ..... \$4 50



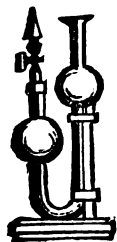
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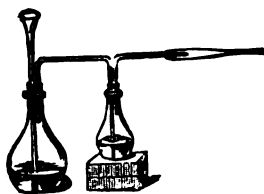
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5083



5074



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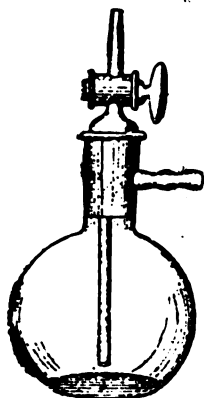
5079

5080. Apparatus, ditto, without re-agents..... 4 00
5081. Apparatus, ditto, the case alone, without the blow-pipe, etc..... 1 75
5082. Apparatus, for quantitative blow-piping, according to Prof. Plattner, (see Appendix).....\$40 00 and \$175 00

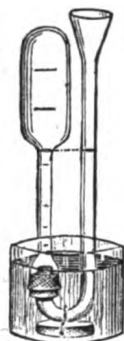
See Appendix for blow-pipe apparatus.

- \* 5083. Apparatus, for the determination of sulphur by bromine, Ledebur's; complete as per engraving but without the supports (support \$4 00 extra.) \$7 50  
The tube with 2 stop-cocks, filled with glass beads, alone..... 4 50
- 5083a Apparatus for sulphur determination, Dudleys..... 3 50

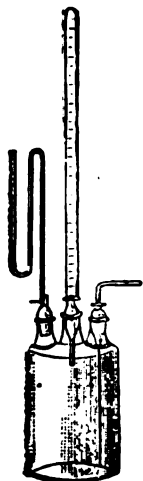
- \* 5084. Apparatus, for volumetric estimations of carbonic acid; for sugar refineries; according to **Gawalovski**; with 2 measuring and 1 filling tube, etc., complete. .... Price 4 50
- \* 5085. Apparatus, for the determination of atmospheric moisture; according to **Ruedorf**, with one stopcock, \$6.00, 2 stopcocks, 8.00, 3 stopcocks ..... 10.00
- \* 5086. Apparatus, for taking the specific gravity of gases; according to **Chancel**. Price ..... each, 4 00
- \* 5087. Apparatus, for determining the specific gravity of cement; according to **Schumann** ..... each, 2 50
- 5087a. Ditto, ditto, **Le Chateliers** ..... " 1 50



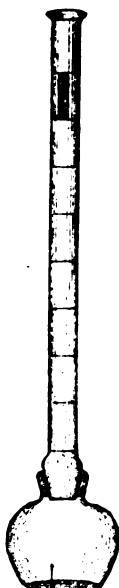
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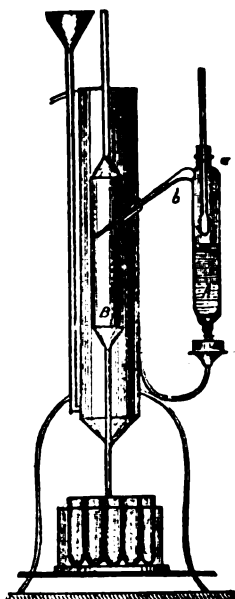
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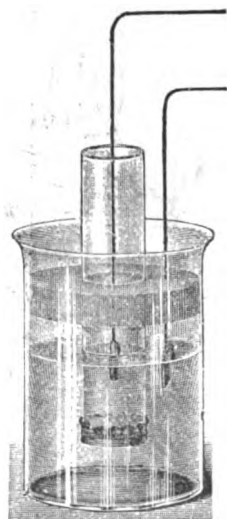
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5088



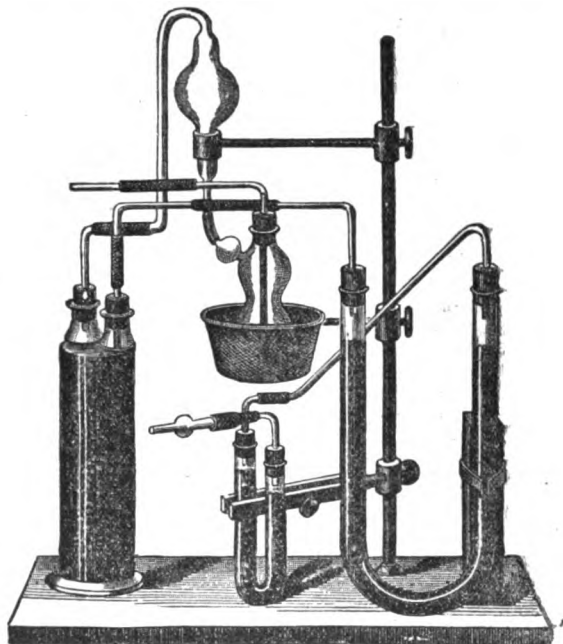
5090

- \* 5088. Apparatus, for fractional distillation **Regnaud's** of copper, and brass. Without thermometer, \$15 50, Thermometer, \$2 00.
5089. Apparatus, for fractional distillation under diminished pressure ..... 3 00  
Other apparatus for fractional distillations, see Flasks and Tubes.
- \* 5090. Apparatus, for the determination of carbon in steel, after **Fresenius**, with platina holders for the + pole ..... 4 00

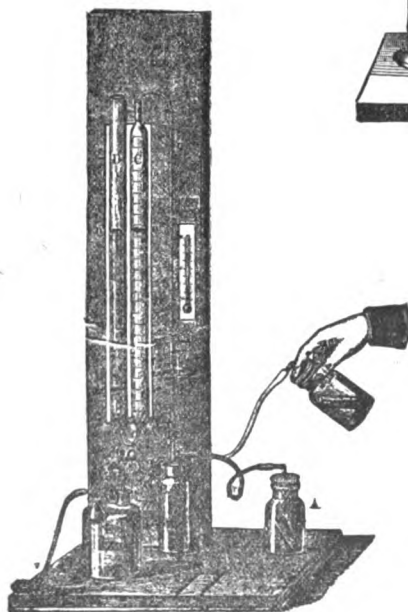
- \* 5091. Apparatus, for the estimation of carbon in pig-iron after Ullgreen, complete.  
 Price.....\$15 00
- \* 5092. Apparatus, Scheibler's standard, for estimation of Ca. Co., in bone-black,  
 accuracy guaranteed, with latest improvements..... 20 00
- 5092a. Rubber cups and bags for same.....50 cents each



5095



5091



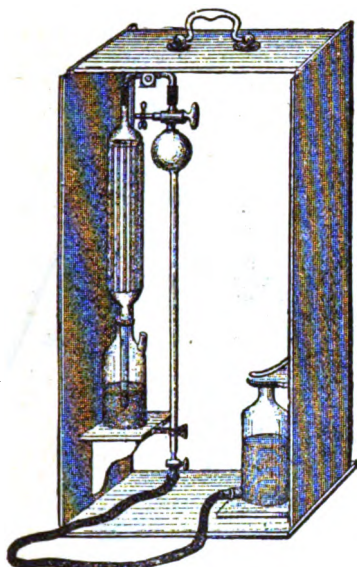
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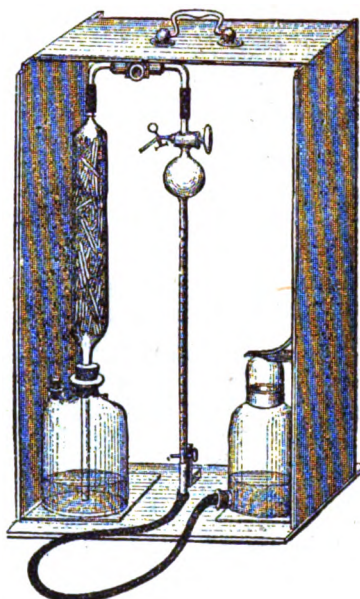
5094

5093. Apparatus, Scheibler's, for the estimation of Ca, in saturation gases ; with printed instructions..... 38 00
- \* 5094. Apparatus, for generating carbonic acid gas, etc., evolution flask, with rubber stopper, funnel tube and delivery tube.
- |                     |                     |         |          |          |
|---------------------|---------------------|---------|----------|----------|
| $\frac{1}{2}$ pint. | $\frac{1}{2}$ pint. | 1 pint. | 2 pinta. | 4 pinta. |
| .45                 | .50                 | .60     | .70      | .85      |
- \* 5095. Apparatus, for constant generating of carbonic acid, hydrogen, sulphuretted hydrogen, etc., a heavy glass jar, bell glass, lead tripod, brass plate and brass stop cock.
- |         |        |      |      |      |      |       |        |
|---------|--------|------|------|------|------|-------|--------|
| Height, | 6      | 8    | 9    | 10   | 12   | 15    | 20 in. |
|         | \$3 75 | 4 50 | 5 00 | 6 00 | 8 00 | 10 00 | 12 00  |

- \* 5100. Apparatus, for estimating carbonic acid, according to Winkler; complete in case and supporting frame.....\$15 00  
The glass parts alone ..... 9 00
- \* 5101. Apparatus for the determination of Oxygen; according to Lindemann, improved by C. Winkler; completed in case and supporting frame.....\$18 75  
The glass parts alone ..... 11 25
- \* 5102. Apparatus, for generating hydrogen, carbonic acid, etc., for laboratory use, in larger quantities; same as used in the Zürich laboratory. Heavy cylindrical glass jars; very practical; does not get out of order; current of gas instantaneous.  
Capacity,  $\frac{1}{2}$  1 2 galls.  
Price, \$4 00 6 00 8 00



5100



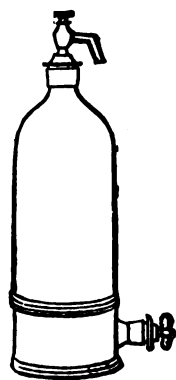
5101



5102



5104



5103

- \* 5103. Apparatus, for making carbonic acid water, according to Prof. Liebig, complete, with under plate, tumbler, filling funnel, and instructions for use.  
Capacity, 1 gal. \$12 00 each.
- \* 5104. Apparatus, for making carbonic acid water, etc., as above, French, made of glass, wicker covered, with instructions.
- |                     | Capacity, qt. | 2 bot. | 3 bot. | 4 bot.             | 5 bot. | 8 bot.        |
|---------------------|---------------|--------|--------|--------------------|--------|---------------|
| Gazogène,           | \$5 50        | 3 pts. | 6 50   | $\frac{1}{2}$ gal. | 5 pts. | 1 gal.        |
| — 5105. Seltzogene, | 5 00          | 5 50   | 6 50   | 9 00               | 10 50  | — each.       |
|                     |               |        |        | 8 00               | 11 50  | wire covered. |

- \* 5106. Apparatus, for displacing by boiling and collecting air or gases contained in water, according to **Jacobsen and Behrens**. Glass parts.....\$1 75 each.  
Glass parts, with supports ..... 4 00 each.

5107. Apparatus, for generating chlorine gas, a ring neck-flask, with perforated rubber stopper, safety tube, washing bottle, delivery tube, etc., etc.

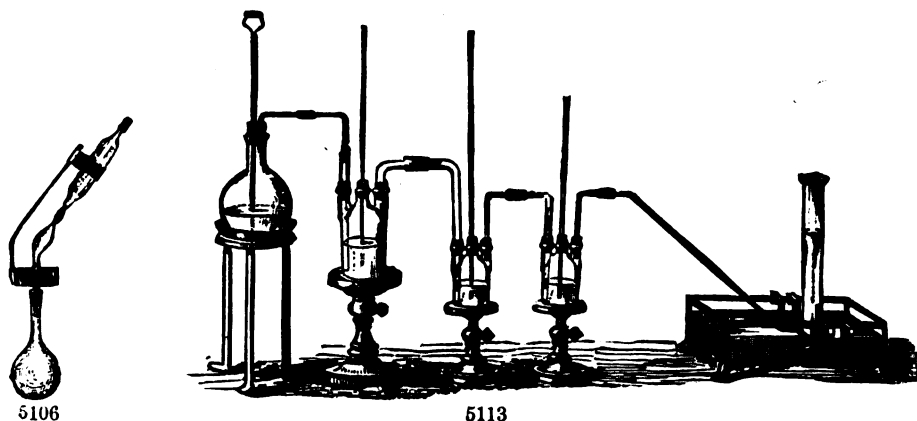
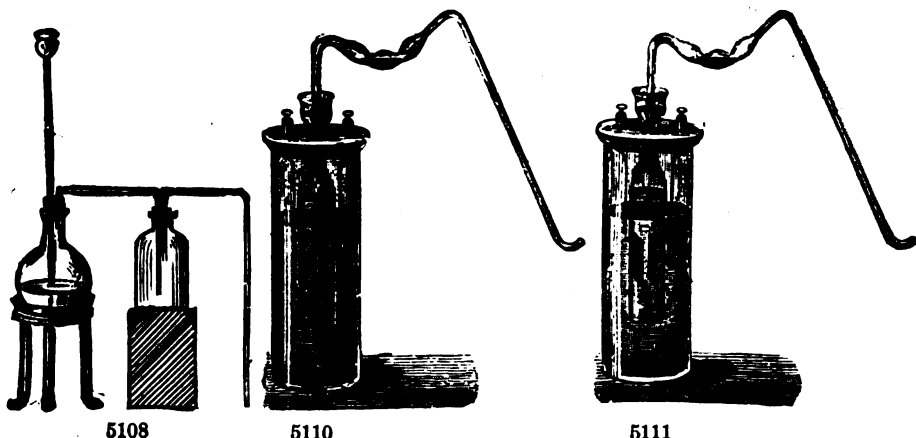
Capacity,	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4 pints.
	.70	.80	.90	\$1 25	1 50

- \* 5108. Apparatus, as above, with sand bath and tripod additional.

For	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4 pints.
Price,	.30	.35	.45	.55	.65

5109. Apparatus, for generating hydrogen or sulphuretted hydrogen, a heavy evolution bottle, with rubber stopper, safety tube and drying tube (see fig. 5076.)

$\frac{1}{4}$ pint.	$\frac{1}{2}$ pint.	1 pint.	1 quart.	$\frac{1}{2}$ gal.
.45	.50	.60	.70	.85



- \* 5110. Apparatus, for electrolytic generation of pure hydrogen..... \$4 00

- \* 5111. Apparatus, for electrolytic generation of pure oxyhydrogen..... 4 00

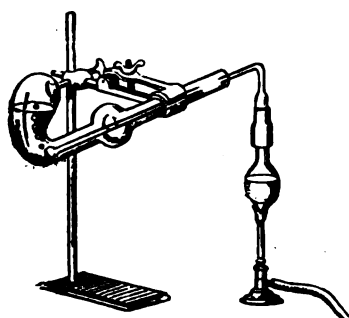
5112. Apparatus for generation  $H_2S$  in larger quantities, for laboratory use.

Capacity,	$\frac{1}{2}$ ,	1,	2 galls.
Price,	\$4.00,	6.00,	8.00,

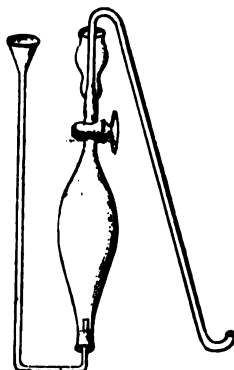
- \* 5113. Apparatus for making chlorine water, ammonia, or hydrochloric acid, a quart flask, three one pint Woulff's bottles, all connections rubber, and rubber stoppers.



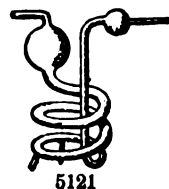
5114. Without stand.....	\$4 25
5115. With tripod and sand bath.....	5 00
5116. With iron ringstand and sand bath.....	5 50
5117. With iron ringstand, sand bath and burner.....	6 25
* 5118. Apparatus, after Bunsen and Fresenius, for the absorption of chlorine, without stand.....	80
5119. Apparatus, with clamp and stands.....	3 00
* 5120. Apparatus for transferring gases in Urea estimations, Hüfner's. Price.....	5 00



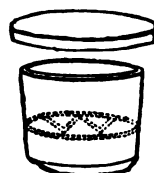
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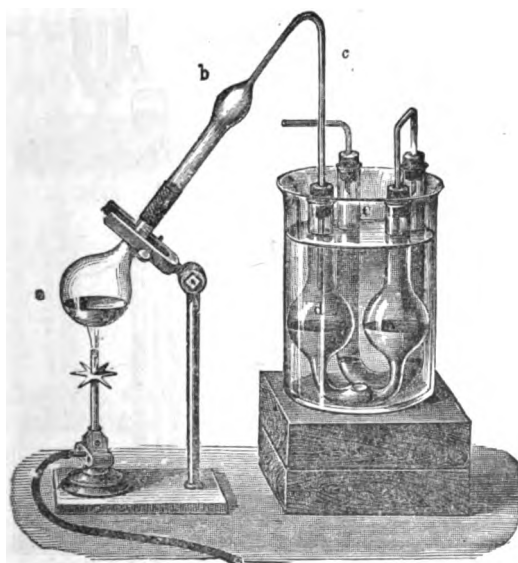
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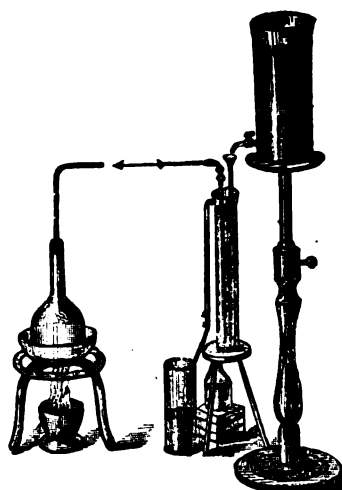
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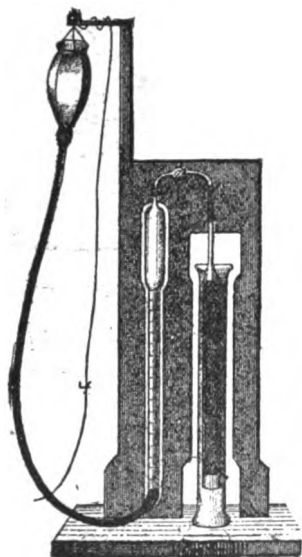
5123

- \* 5121. Absorption Apparatus, according to Dr. C. Winkler.  
Price, large.....\$2.25. Small 75 cts. Medium.....\$1 25
- \* 5122. Apparatus for the volumetric determination of Cl., after Bunsen, complete, with support and burner.....4 50
- \* 5123. Apparatus, according to Mitcherlich, for phosphorus detection, complete with supports.....12 00
5124. Apparatus without the supports, the glass parts alone.....8 00
- \* 5125. Apparatus of lead for etching with hydrofluoric acid, small, \$3 50 large, 5 00

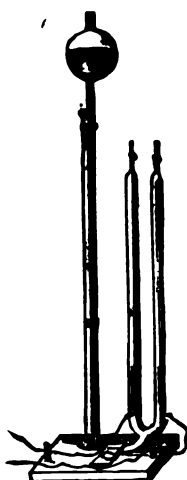
- \* 5126. Apparatus for the volumetric estimation of Oxygen, on support. \$15 00  
The glass parts alone. 8 00

### APPARATUS—HOFMANN'S.

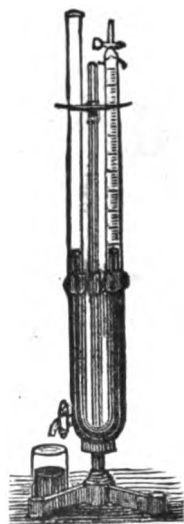
- \* 5127. Apparatus for the decomposition of water, according to Prof. Hofmann, showing that water is composed of 2 vol. H and 1 vol. O ; with two stop-cocks with stand of wood or iron. \$7 50
5128. Apparatus, 2 tubes graduated, mounted. 10 00
5129. Apparatus not mounted, plain. 5 50
5130. Apparatus graduated, not mounted, with extra stopcock. 7 50
- \* 5131. Apparatus, for demonstration that in uniting H and O to water a condensation of  $\frac{1}{2}$  takes place. Tube with platina electrodes, stop-cock, steam cylinder and glass worm, complete on stand. 10 00



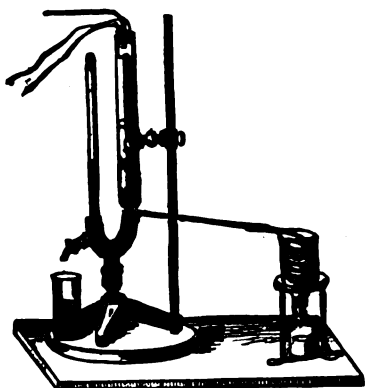
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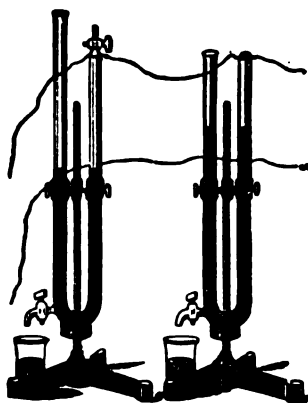
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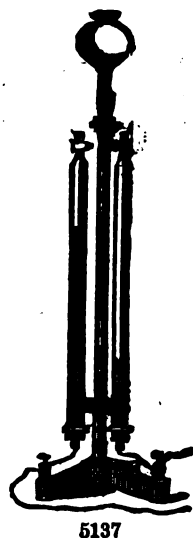
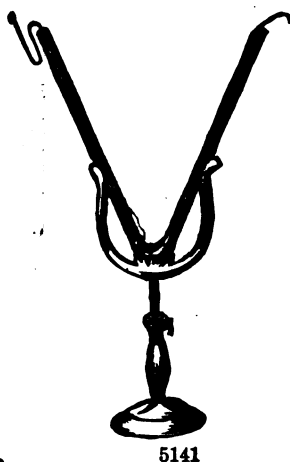
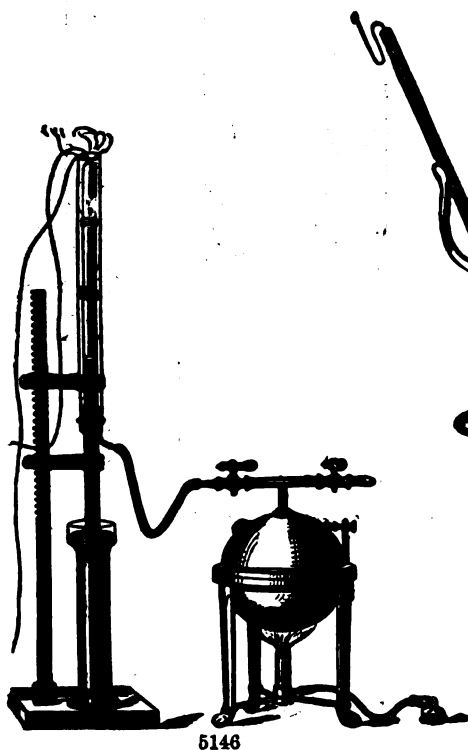
5131



5132

- \* 5132. Apparatus, Hofmann's, to show that H and O combine only in the same proportions as they are generated from  $H_2O$  consisting of 2 tubes with 2 stop-cocks and Platina Wires. Each. \$4 00
5133. 1 tube with one stop-cock and Platina Wires. Each. 3 00
5134. Set of 3, with supports. 20 00
5135. Apparatus, for the decomposition and recombination of water, called Prof. Hofmann's Lecture Eudiometer, with stop-cock near the bottom of one of the tubes, and another at the top of the other Tube, with platina electrodes. 9 50
- \* 5135a. Ditto, if for recombination only. 7 50

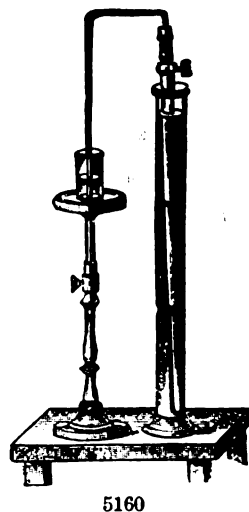
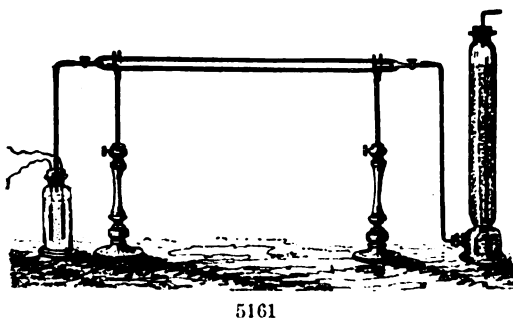
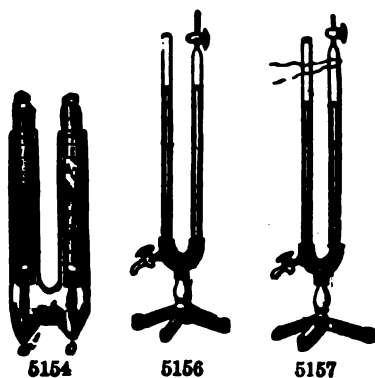
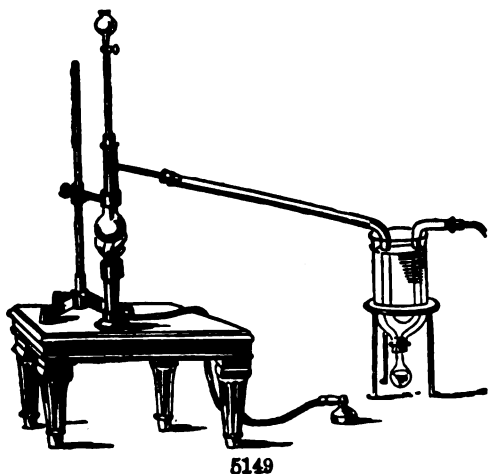
5136. The same, the glass part alone.....	5 00
* 5137. Apparatus, Hofmann's, for $H\ Cl$ decomposition, with platina or carbon electrodes.....	8 00
5138. Glass part only.....	5 50
5139. Apparatus, set of 3, two of No. 5137 and one of No. 5127 but on iron support.....	23 50
5140. The same, the 3 glass parts only.....	15 50
* 5141. Apparatus, for decomposition of water, ammonia, and $H\ Cl$ according to Prof. Hofmann, a V. tube with platina electrodes, on iron stand, Small.....	4 00
5142. Large.....	5 00
5143. Apparatus, the glass part alone \$2 50..... resp.	3 00
5144. Apparatus, Hofmann's, showing the oxydation and reduction of copper and copper oxide by heat and hydrogen.....	2 50



5145. Apparatus to estimate the Density of Vapors; Hofmann's.

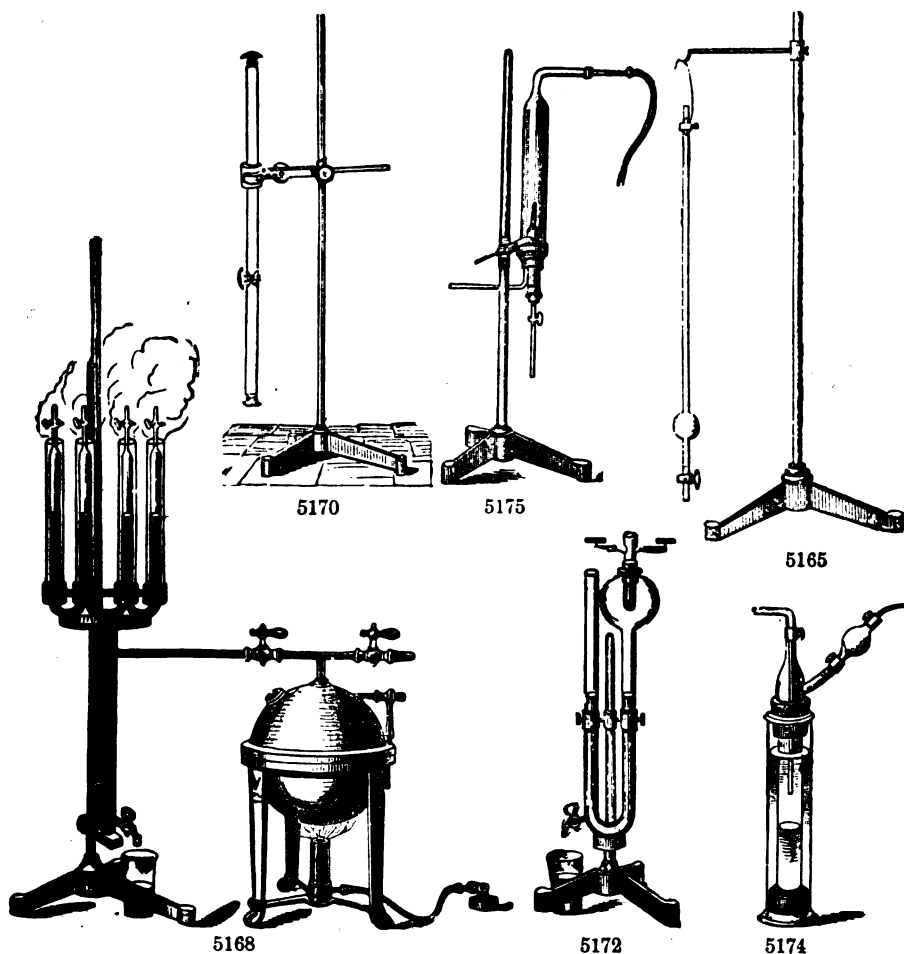
a, the barometer tube finely graduated in 1-5 c-c and in m-m.....	5 50
b, the outside cylinder for same.....	1 50
c, the small boiler on support with gas lamp.....	10 00
d, the condenser with worm of copper, complete with all the necessary attachments, and with a support which is arranged so, that the condenser may be raised or lowered.....	12 00
e, the measuring apparatus.....	35 00
f, the clamp support for a & b.....	3 75
Small bottles, glass-stoppered to receive small quantities of liquids. Per doz.	2 00
* 5146. Apparatus, Hofman's to prove, that two volumes of $H$ combined with 1 volume of $O$ , produce 2 volumes of water-gas measured at $100^{\circ} C$ .	85 00
5147. The Tube with jacket, support and cylinder.....	25 00
5148. Copper Steamboiler with stop-cocks, gauge and burner.....	60 00

- \* 5149. Apparatus for decomposing Nitric Acid by heat (see Hofm. Einleit. 1871, p. 202). without platinum flask ..... 9 00  
 5150. Platinum flask for above, about 75 to 100,0 per grm. .... 50  
 5151. U-shaped Tube, Glass Condenser and Support. .... 3 50  
 5152. Funnel Tubé with stop-cock ..... 1 00  
 5153. Clamp Support ..... 1 75  
 \* 5154. Apparatus for the decomposition of water and collection of the gases separately in graduated tubes ..... 1 50  
 5155. The same, with glass foot to set upon the table. .... 1 75  
 \* 5156. Apparatus, Hofmann's, proving the amount of hydrogen in 1 vol. H Cl. .... 5 00



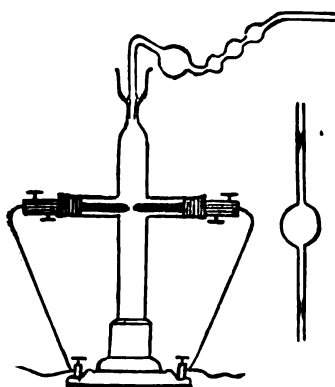
- \* 5157. Apparatus, to show that 1 vol. of N. unites with 3 vols. of H, to 2 vols. of ammonia, the tube with 2 stop-cocks. .... 4 00  
 5158. The same, with support. .... 6 00  
 5159. Apparatus to show that ammonia is composed of 1 vol. Nitrogen and 3 vols. H, the tube ..... 3 50  
 \* 5160. Apparatus, with support table and cylinder ..... 6 75  
 \* 5161. Apparatus, Hofmann's, to demonstrate that H Cl. is composed of 1 vol Cl. and 1 vol. H. The tube alone. .... 2 75  
 5162 The same with supports and tubes. .... 5 00  
 5163. The same with cylinder and battery complete ..... 10 00  
 5164. The same, Cylinder with enlargement to receive the tube ..... 1 00

* 5165. Apparatus, Hofmann's, for proving that H and Cl. unite to H Cl. without condensation. The tube alone.....	\$2 75
5166. The tube with support.....	4 75
5167. Small bulbs for CS. Doz.....	50
* 5168. Apparatus, Hofmann's, to show pure and combined gases under the influence of temperature and pressure. Glass parts on support.....	29 50
5169. The copper steam boiler of (10 Liter 2½ gallons capac.) complete with burner. 49	50
* 5170. Apparatus, Hofmann's, for demonstrating invariability of composition of H Cl. Tube with support.....	5 00
5171. Tube alone.....	3 50



* 5172. Apparatus, showing that oxygen has the same volume as carbonic acid and sulphurous acid formed from it. The tube alone.....	6 00
5173. The Tube with support.....	9 00
* 5174. Apparatus, to experiment with liquid sulphurous acid, with cylinder.....	5 50
* 5175. Apparatus, demonstrating the phenomena of combustion, the Tube alone with platina burner.....	5 00
5176. The Tube with support.....	7 25

- \* 5177. Apparatus for the decomposition of hydrochloric acid (leaving H. and Cl. mixed) as detonating mixture. See Roscoe & Schorlemmer's Treatise on Chemistry..... \$5 00
- \* 5178. Receiving tubes for same. Each..... 25
5179. Apparatus, according to Bunsen, for electrolytical generation of Hydrochloric Acid, with carbon electrodes..... 4 00
- \* 5180. Apparatus to heat liquids of a high boiling point; consisting of a tube with four bulbs ground into the neck of a round bottomed flask.  
Capacity, 2, 4, 8, 16 oz.  
.60, .75, .90, 1.10.
- \* 5181. Apparatus for absorbing and for direct analysis of gases dissolved in water; according to Thorne. Price each..... 5 50
- \* 5182. Apparatus for determining the quantity of nitro-glycerine in dynamite; according to Hempel; Per set, \$7 00; complete with burettes..... 12 00



5177



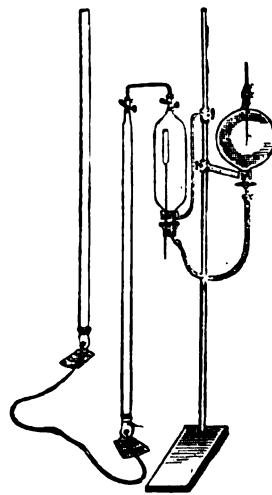
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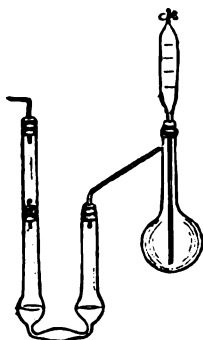
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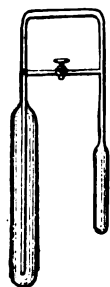
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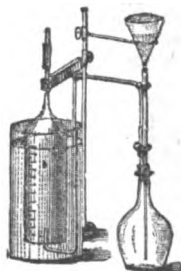
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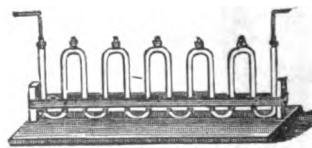
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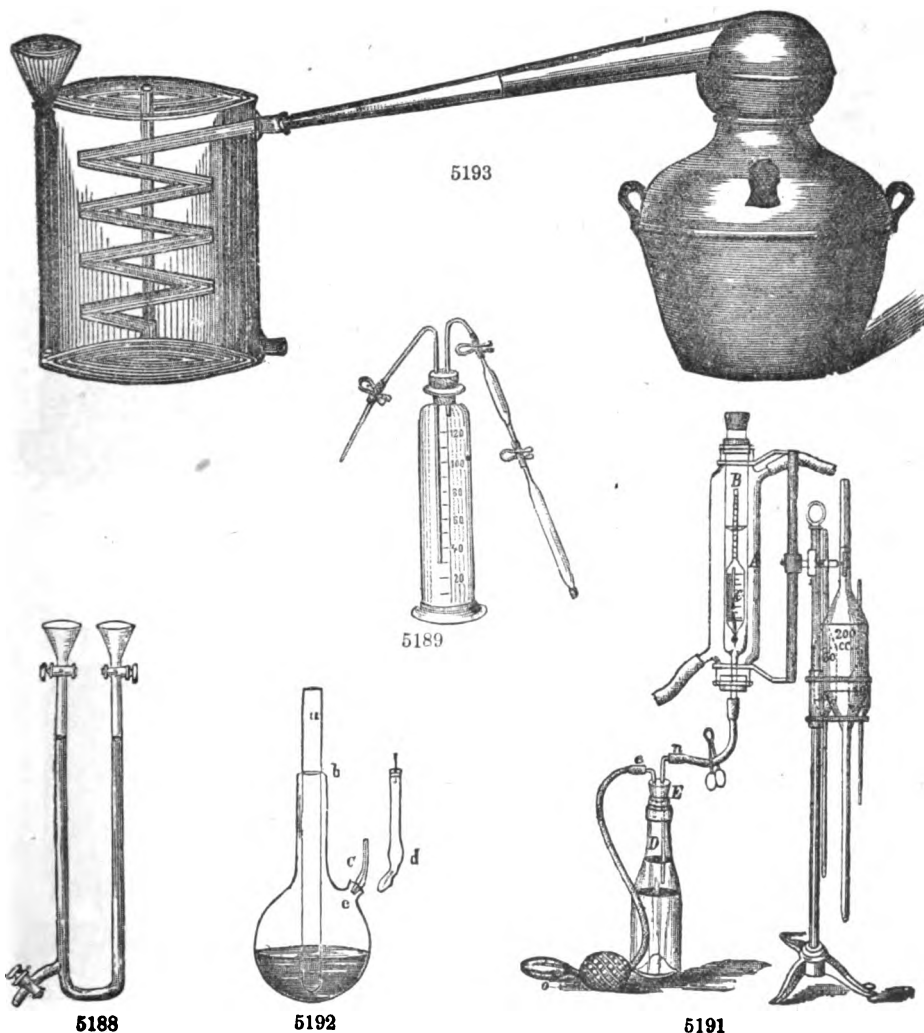
5186



5183

- \* 5183. Apparatus for absorption, according to Gore; without frame and baseboard  
Price..... 4 50  
Frame, additional..... 3 00
- \* 5184. Apparatus according to Mohr, for the absorption of ammonia, etc. Price, each 2 00
- \* 5185. Apparatus for the Condensation of Ammonia and the demonstration of the principle of Carre's Ice-Machine. Price, each..... 3 00
- \* 5186. Apparatus for measuring absorption, according to Richter; consisting of a cylindrical jar, graduated bell-glass, gas-bottle, etc., complete with support..... 7 50
5187. Apparatus, not graduated..... 6 50

- \* 5188. Apparatus for Pneumato-Hydrostatic Illustrations; of glass ; with 3 Geissler's stop-cocks..... \$4 50
- \* 5189. Apparatus for eudiometric analysis, Bunsen's ; with graduat. gas reservoir of 120 c. c. for transfer to the gas collecting tubes, with 3 pinch-cocks and delivery tubes..... 3 50
5190. Apparatus, for the estimation of **human milk after Soxhlet**, complete in velvet-lined case..... 12 50
- \* 5191. Apparatus, according to **Soxhlet**, for the areometric determination of **fat in Milk**, complete with 2 lactometers, instructions and tables..... 30 00

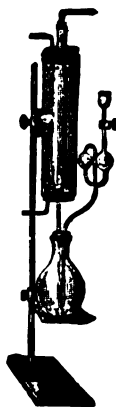


- \* 5192. Apparatus for the estimation of **melting points**; made of glass ; according to Anschuetz and Schultz ; 150 c. c. \$1 25 250 c. c. \$1 75 500 c. c. \$2 25
- \* 5193. Apparatus for **distilling water or spirits**: a tin-lined copper retort, with zinc cooler, heavy tin worm, a receiving funnel for cold water, and an outlet for the hot water. All stills being tubulated, of superior make and arranged to be set into a water bath.

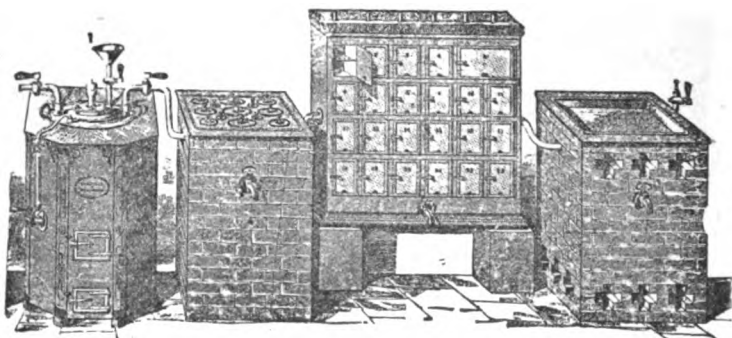
Contents,	$\frac{1}{2}$ ,	1.	2,	3,	5 gal.
	8.00,	10.00,	12.50,	15.00,	18.00.

See also Retorts

- \* 5194. Apparatus, for carbon. acid estimation, according to Classen (fresen. Zeitschr. 1876, p. 288 ) Complete with support.....\$4 50  
The glass parts alone..... 3 00
- \* 5195. Apparatus, for vapor density determination after Hofmann, improved by Schiff. Price.....\$22 50
- \* 5200. Apparatus, for chemical laboratories of large colleges and universities, very complete, with Prof. Mohr's and other latest improvements. A steam pressure Apparatus with water baths, sand baths, hot air baths, drying closets for filters, etc., etc., will be imported or built to order at the lowest price. This style is adopted by most of the European universities. As per sketch, all metal parts..... \$500 00



5194



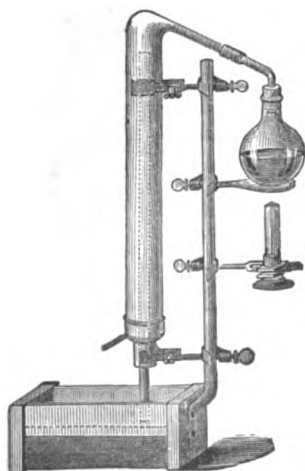
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c

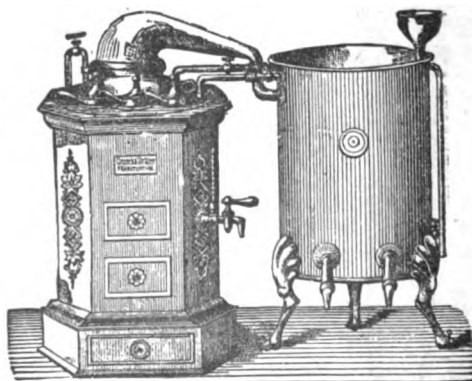
5200

d

b



5195



5205

## Parts separately:

- 5201. The pressure apparatus, a.....\$200 00
- 5202. The sand bath apparatus, b..... 30 00
- 5203. The water bath of tinned copper, c..... 50 00
- 5204. The double wall drying apparatus with 23 chambers made of copper well tinned, each chamber with separate draught, d.. 220 00
- \* 5205. Apparatus, for laboratory work..... 200 00
- 5206. Apparatus, smaller than the preceding.....150 00

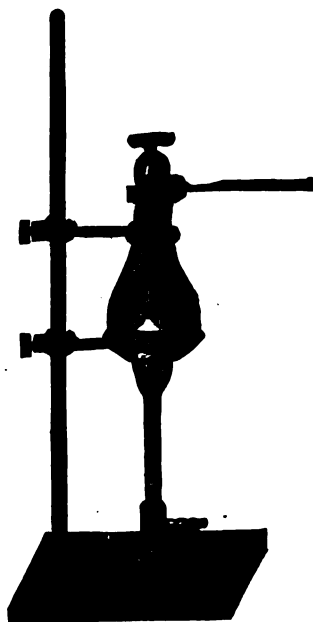


- \* 5207. Apparatus for generating oxygen, a copper retort with delivery tube fitted by ground joint and gallow screw.

Capacity of retort,	$\frac{1}{2}$ pint.	pint.	quart.	$\frac{1}{2}$ gallon.
Price of retort,	\$1 80	2 00	2 50	3 00

For others, see Retorts.

- \* 5208. With ring stand and Bunsen's burner. .... 1 pint, \$3 00      2 pints, \$3 50  
 5209. With ring stand and Berzelius's lamp ..... 1 pint, 6 25      2 pints, 6 75  
 \* 5210. Apparatus, for generating oxygen, retort of sheet iron with folding support, the best form known, see fig. 5214..... 4 00  
 5211. Without support,  $\frac{1}{2}$  gallon..... 3 00



5207-5208



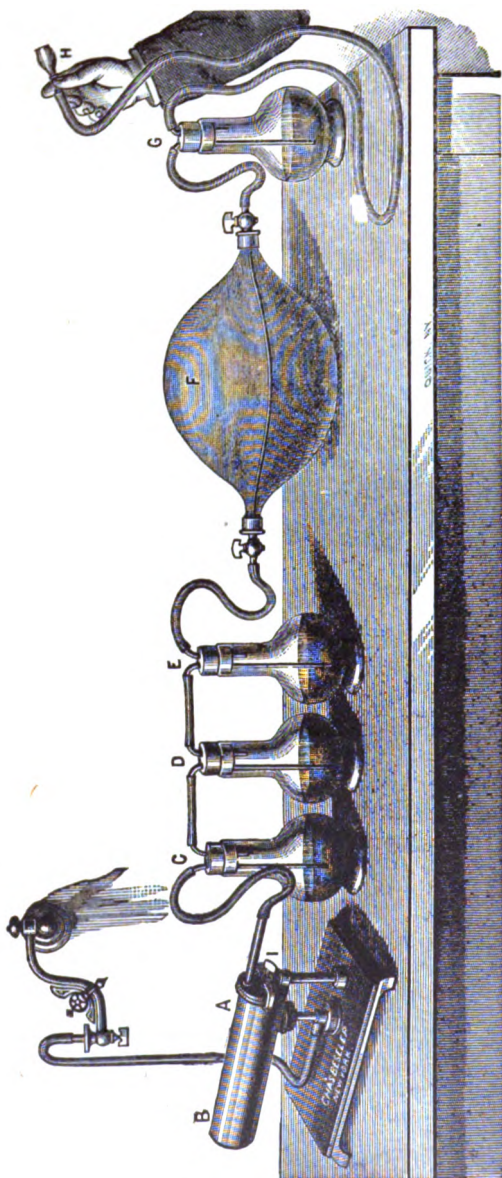
5212

- \* 5212. Apparatus, for generating oxygen, complete, as shown in out with conical oxygen retort of copper, tripot stand, lamp, wash bottle, 25 gallon bag, etc. .... \$20 00  
 5213. Apparatus, for generating oxygen, with conical retort of iron..... 18 00

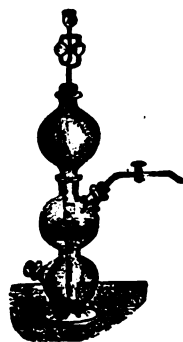
\*5214. The same with cylindrical retort and round rubber bag for oxygen treatment. \$25 00

\* 5215. **Apparatus for generating sulphuret of hydrogen, according to Kipp**; the most improved form for a constant supply of  $H_2S$ . Generator, provided with Geissler's stop-cocks, safety tubes, etc., complete.

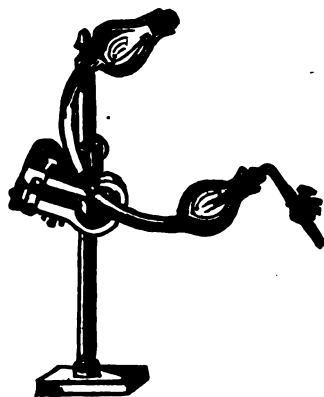
Contents,	$\frac{1}{2}$ pint.	$\frac{1}{2}$ pint.	1 pint.	1 quart.	$\frac{1}{2}$ gallon.
	\$2 75	3 25	3 75	4 50	6 25



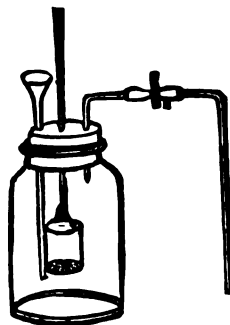
5214



5215



5216



5218

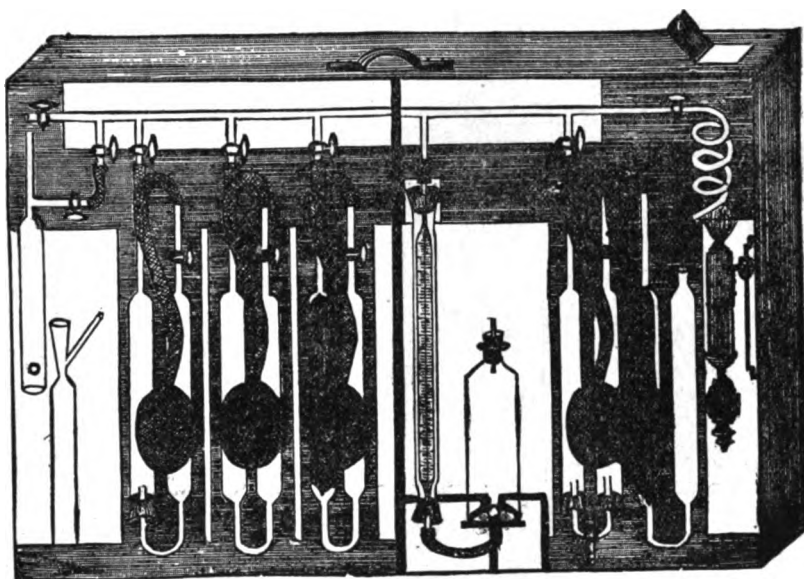
\* 5216. **Apparatus, Babo's for generating Sulphuret of Hydrogen**; very handy where a frequent supply of small quantities of  $H_2S$  is needed; complete; mounted on improved stand, with Rubber stoppers, Pinch-cocks and Delivery tube... \$3 00

5217. The semi-circular tube alone. 1 25

\* 5218. **Apparatus, for generating oxygen and sulphuret of hydrogen; Fresenius.**

Pint,	\$1 50	Quart,	\$2 00.	Half gallon,	\$2 50
-------	--------	--------	---------	--------------	--------

- \* 5219. Apparatus, for generating carbon, acid, hydrogen and sulphuretted hydrogen gas (as used in the Bonn laboratory); consisting of a cylindrical glass jar on foot 24 inches high x 4 inches diameter, a cylindrical reservoir suspended inside, which is contracted at the lower end to support the substance necessary for generation and a delivery tube with stop-cock on top; the whole of glass. Similar to fig. 5102. .... \$12 00
5220. Apparatus, smaller, the outside jar, 13 inches high x 3 inches diameter ..... \$4 00
5221. Apparatus, for generating hydrogen or  $H_2S$  in larger quantities, glass parts with rubber connections:.....\$5 00



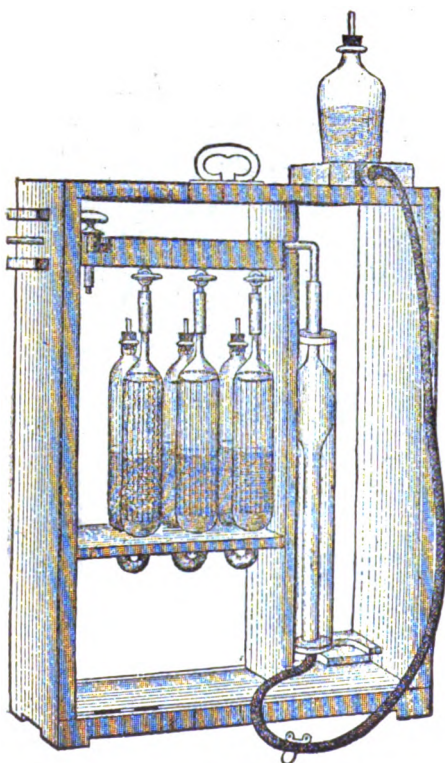
5224

5222. Apparatus, complete on stand with washing and drying arrangements .....\$20 00
5223. Apparatus, for generating hydrogen, of copper, with bell, basket and stop-cock, 1 gallon size ..... \$9 00

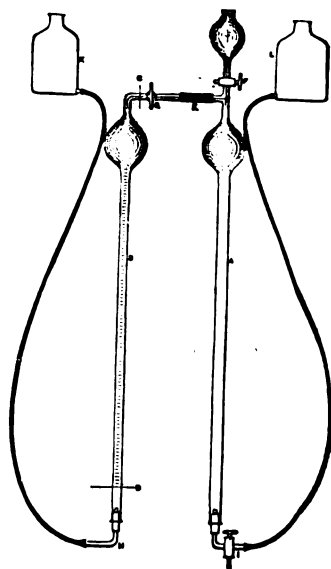
## APPARATUS FOR GAS ANALYSIS.

- \* 5224. Apparatus, for the analysis of gases, especially furnace gases, according to Orsat, the large, improved apparatus, consisting of 5 pipettes, 1 measuring burette, rubber bags, etc. complete .....\$70 00
- Platin spiral abt. 30.0 @ 85 c. per gramme extra or palladium tube 2.00 extra.

- \* 5226. Apparatus, for gas analysis in general, especially for furnace gases; according to **Orsat-Muencke**; complete in case 3 pipettes and 1 measuring burette, 25 00
- The glass parts alone . . . . . 16 50
5227. Ditto, **Fisher's modification**, very compact and handy for travelling, similar but half the size of above, complete in case . . . . . 20 00
- Glass parts alone . . . . . 14 00



5226

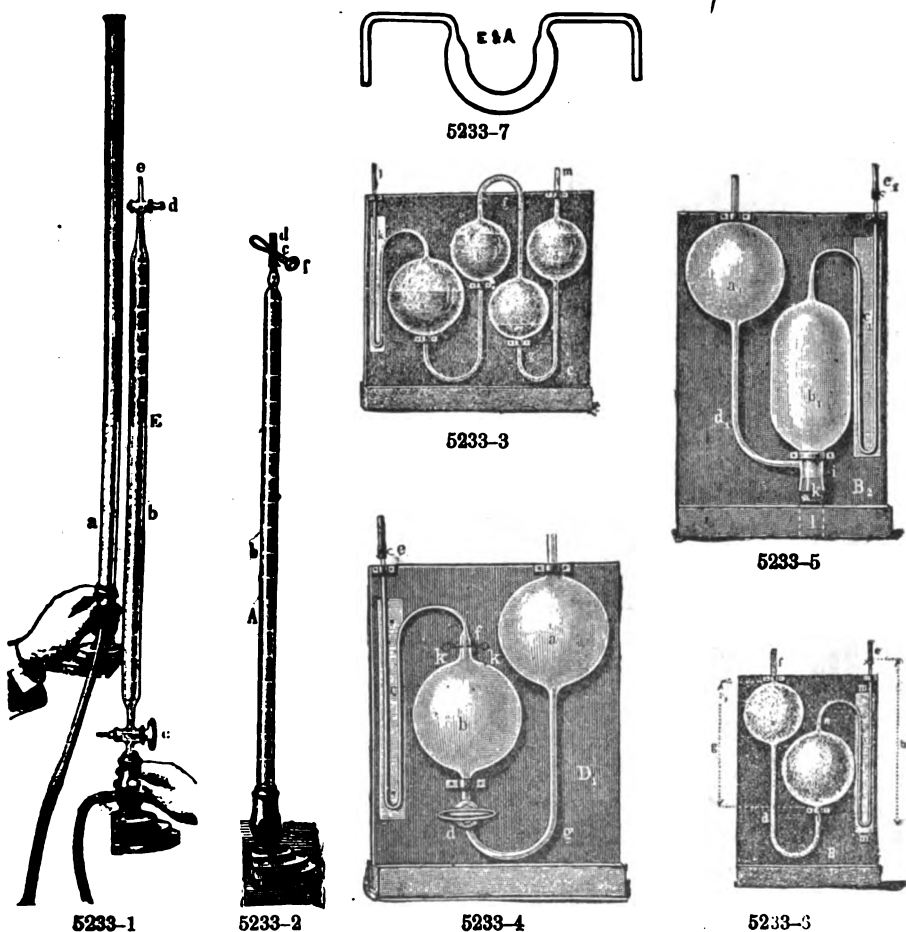


5228

- \* 5228. Apparatus, for gas analysis, designed by **Dr. Arthur H. Elliot**, expressly for the analysis of illuminating and furnace gases, very valuable for gas works and iron companies. Lately improved form, with bulbs and shortened tubes.
5229. Apparatus, as per diagram (bottles and tubing \$2.00 extra) . . . . . \$12 00
5230. Apparatus, with water-jacket and rubber stoppers . . . . . 15 00
5231. Apparatus, portable, in case, complete . . . . . 24 00
5232. Explosion burette for above, \$8.00 extra.
- 5232a. Apparatus, Elliot, **Mackintosh's modification**, glass parts . . . . . 24 00

\* 5233. Apparatus, for the analysis of gases according to Professor W. Hempel, the most perfect and most complete apparatus designed for exact and rapid determination as described in his "Neue Methoden für Analyse der Gase;" its great advantages are:

1. Only one sample volume of gas necessary to determine all gases it contains.
2. All possible re-agents can be used with it.
3. No waste of chemicals.
4. No losses by absorption, etc.
5. Almost absolute accuracy and one-tenth the time formerly necessary.
6. Does not need refilling and cleaning after each test it stays as it is, always ready for further tests.



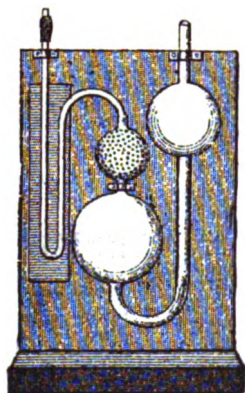
The apparatus includes: 4 gas burrettes, 3 single gas pipettes, 2 compound pipettes, 1 explosion pipette, palladium tube and 12 connections, which we furnish all mounted with support table for pipettes, for.....\$35 00

Re-agents, electric battery and Rhumkorff's coil, as used with Hempel's apparatus are charged extra at reasonable rates.

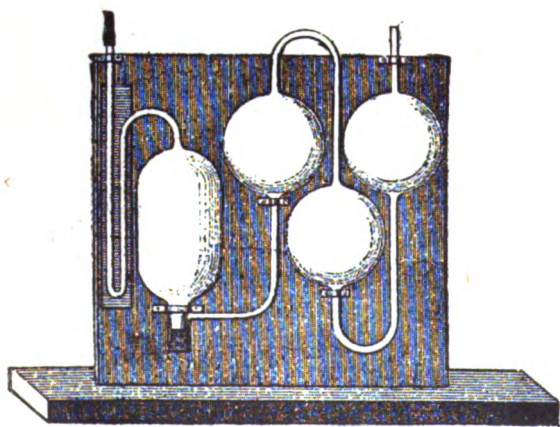
**Additional parts lately designed by the author.**

See following page.

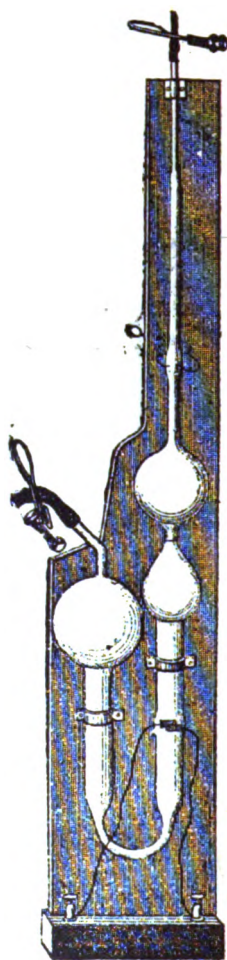
5234. Hydrogen pipette on support.....\$ 3 00  
 \* 5235. Absorption pipette mounted and filled with pearls..... 3 00  
 \* 5236. Compound pipette, mounted, for solid substances..... 4 00  
 \* 5237. New form explosion pipette, mounted..... 6 00  
 — 5238. The complete apparatus arranged for absolute determinations  
     over Mercury..... \$125 00  
 — 5239. Ditto, the complete apparatus with barometer..... 175 00  
     Price of single parts see gas burettes and gas pipettes.



5235



5236



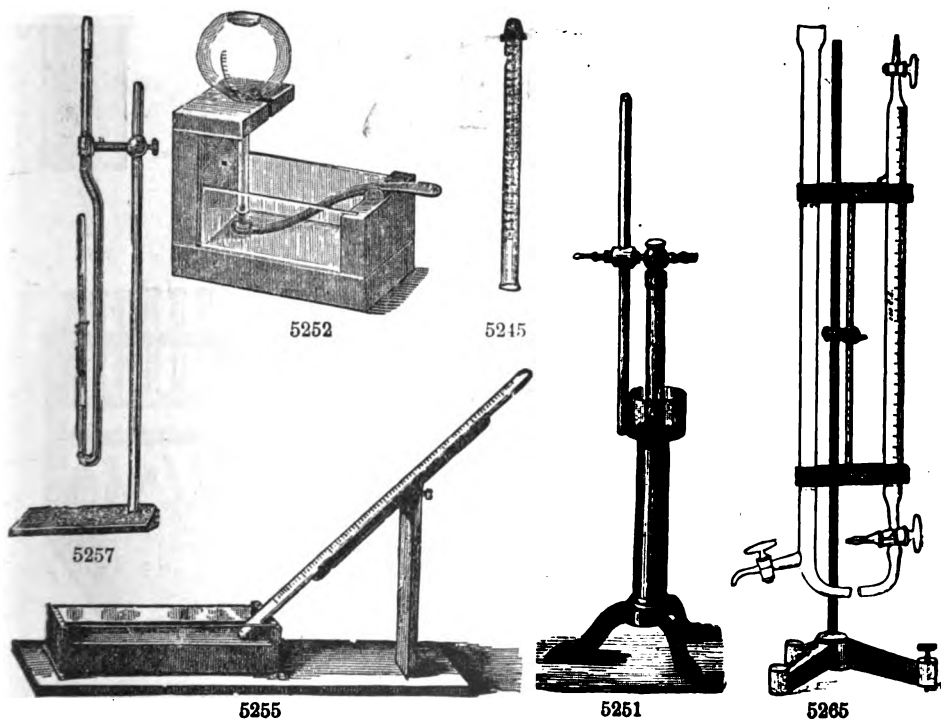
5237

## APPARATUS

for determination of Gases, according to Bunsen; see "Gasometrische Methoden."

- \* 5240. Absorptiometer for estimating the coefficient of absorption See fig. 5000..... \$80 00  
 \* 5241. Absorption Tube, straight, graduated in m.m. See fig. 5002..... 1 00  
 \* 5242. Absorption Tube, with bulb, graduated in m.m. See fig. 5001..... 1 30  
 5243. Caliber Measure, with handle and ground plate..... 1 20  
 5244. Diffusion Apparatus..... 6 00

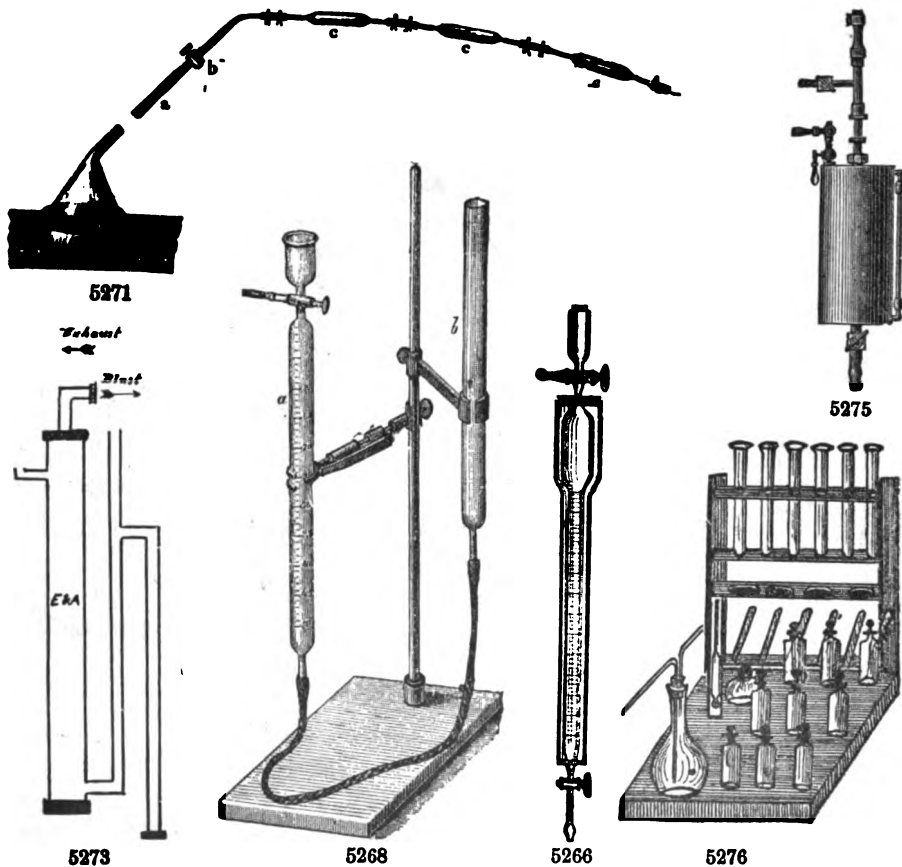
- |   |   |
|---|---|
| * 5245. Endiometers, graduated in millimeters.  |   |
|   | 300      500      700      800 m. m. long.        |
|   | Price, \$2 00      2 50      3 00      3 50 each. |
| 5246. Funnel, with stop-cock to fill above tubes.   |   |
|   | Capacity, 50      100      200 C.C.               |
|   | Price, \$1 50      1 75      2 00                 |
| — 5247. Cathetometer, with telescope; base u. levelling screws.....   | \$35 00 to \$45 00                                |
| 5248. Glass-dividing Arrangement, complete. ....  | 27 50   |
| * 5249. Apparatus for preparing pure hydrogen.....  | 4 00  |
|   | See fig. 5110.                                    |
| * 5250. Apparatus for preparing pure oxyhydrogen.....   | 4 00  |
|   | See fig. 5111.                                    |
| * 5251. Apparatus, for determining the specific gravity of gases by the rapidity of discharge; with iron mercury cistern..... | 22 50   |
| * 5252. Apparatus, to measure the volume of gases with mercury trough of glass and wood.....                                  | 7 50  |
| 5253. Leyden Jar, with platinum coating.....  | 3 50  |
| 5254. Porcelain Tube, for electric sparks.....  | 5 50  |
| * 5255. Mercury Trough, with glass sides, according to size.....  | 6 00 to 7 50                                      |
| 5256. Syphon Barometer, with graduation..   | 10 00   |



- |  |       |
|--|-------|
| * 5257. Syphon Barometer, with support .....   | 12 00 |
| 5258. Steam Apparatus, complete with stands, etc. ....   | 18 00 |
| See also gasometer, photometer, induction coils, dipping batteries and pinchcocks.   |       |
| 5259. Thermometer, 50 C.C., 1-5 to insert in open limb of barometer. ....  | 4 00  |
| 5260. Blowpipe, with small lamp attached for closing and sealing glass tubes. ....   | 1 50  |
| 5261. Iron Support, extra heavy, with adjustable holder for the eudiometer tubes.  |       |
| Price .....  | 5 00  |
| 5262. Tong for holding tubes, etc., in drawing out. ....   | .75   |
| 5263. Apparatus, for estimating the density of illuminating gas by the velocity of<br>discharge (Bolley's handbook on technical gas industry), according to Schilling. |       |
| Price .....  | 18 00 |
| 5264. Apparatus, Winkler's, for gas analysis, the glass parts. ....  | 8 00  |
| * 5265 Apparatus, Winkler's, for gas analysis, complete with support. ....   | 10 80 |



* 5266. Bunte's gas burette .....	\$6 00
Jackets, \$1.00 extra.	
5267. Apparatus, same with support .....	8 50
* 5268. Langes gas burette, 50 C. C. ....	} If with patent } \$5 00
5269. Langes gas burette, 100 C. C. ....	
5270. Apparatus, same with support, additional .....	2 50
See also azotometers, nitrometers, etc.	
* 5271. Apparatus, for collecting gases of mineral waters, etc., with 3 tubes, according to Bunsen's .....	4 00
5272. Apparatus for collecting gases, according to Fresenius .....	10 00
All other glass instruments used in testing mineral waters, as described in "Fresenius' quantitative analysis," we furnish at low prices.	

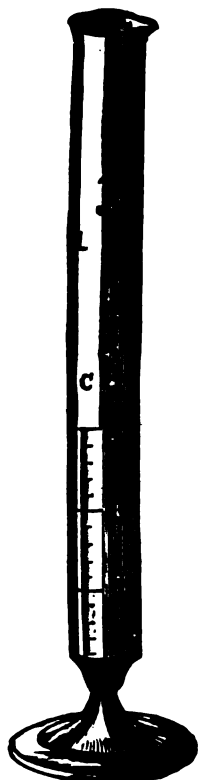


- \* 5273. Apparatus, according to Professor Richards for exhausting and compressing air, this is one of the most useful apparatus where hydrant pressure is obtainable, equally valuable as quick filter or as blast for blast lamps, etc. .... \$ 7 00
5274. Apparatus, complete with pump. .... 8 75
- \* 5275. Apparatus, ditto, according to Muenke. .... 14 00
- With vacuum gauge, \$5 00 extra.
- \* 5276. Apparatus, for urinary analysis, according to Professor Draper; a handsome wooden stand, with drying points, washing bottle, urinometer, glass cylinder, 4 watch glasses,  $\frac{1}{2}$  dozen test tubes, 9 labeled glass-stoppered bottles, and brass alcohol lamp. .... \$4 50
- T. expressly arranged for students.
- 5277. Ditto ..... 5 00
- 5277a. D. .... \$10 04

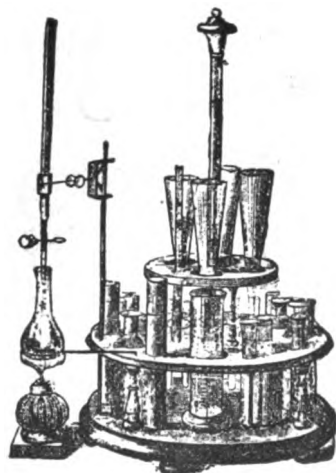


\* 5278. Apparatus, **Urinary, Roberts'** for testing urine. This desirable apparatus consists of the following parts: 1 set Neubauer's Urinometers, in two spindles, one ranging from 1,000 to 1,020 and from 1,020 to 1,040 complete, with necessary Test Glasses; 4 Urine Glasses conical, with lip and foot, 6 Test Tubes, of annealed glass, 6 inches long; 1 Alcohol Lamp complete; 5 Bottles, with engraved labels, of 5 ounce capacity containing the following pure re-agents; Acetic Acid, Nitric Acid, Liquor Potassæ, Liquor Ammonii, Fehling's Solution. 1 Burette with spring clamp, graduated from 0 to 250 grains or 25 CC; 1 Bunsen's Burette Holder; 3 Pipettes, 5 to 6 inches long; 3 Stirring Rods; Graduate: 1 Flask with flat bottom; 1 Ring, to support Flask; 1 box Litmus Paper. The whole is tastefully and conveniently arranged on a circular stand of two tiers, made of polished wood, exactly to suit the wants of the physician in office.....\$15 00

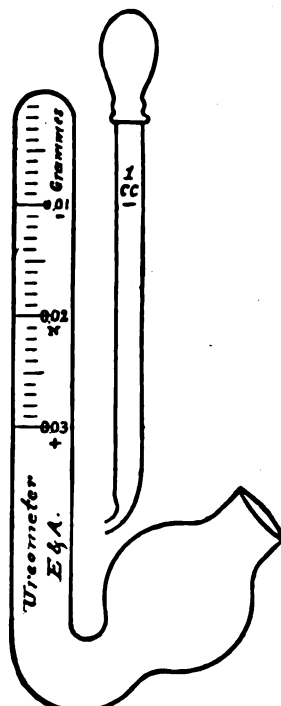
5278. Modern Urinary Set, in polished case.....\$10 00



5279



5278



5280

\* 5279. Approximate Tube for urinary tests, Murray's..... \$1 25

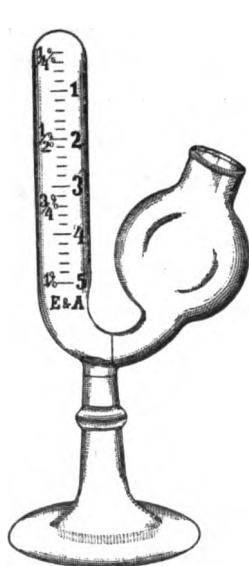
5279a. Apparatus for estimating urea, Marshall's, \$3 00. Fowler's, \$2 50.

\* 5280. Apparatus, for estimating urea; ureometer; according to Dr. Doremus..... 1 25

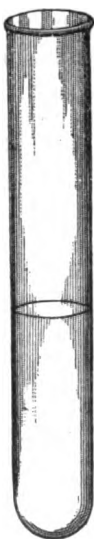
Small Support 25 cts., Large Support, 90 cents extra.

5280a. Ditto, ditto, on glass foot..... 1 50

- \* 5281. Apparatus for the estimation of sugar in urine, "Dr. Einhorn's Fermentation Saccharometer," set of 2 in case, with graduated tube..... 1 50  
Single tubes..... 75 cts. each.
5282. Nos. 5280 and 5281 with Esbach's Albumenometer and Squibb's Urinometer with Thermometer, form a very valuable test set for physicians.  
Complete ..... 4 75
- \* 5283. Apparatus, for estimating urea ; ureometer ; according to Dr. Häfner..... 3 00
- \* 5284. ditto, improved form on stand with graduated tube, etc..... 5 50  
Other Urinary Apparatus see supplementary list.
- \* 5285. Apparatus, for the determination of carbon according to Prof. Liebig, combustion furnace with combustion Tube, chloride calcium tube and potash bulbs. complete. .... \$4 00  
See also carbon determination.



5281



5283



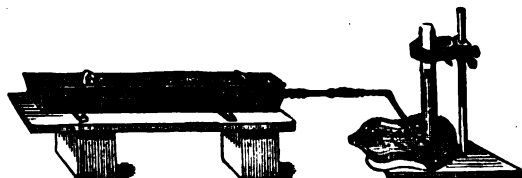
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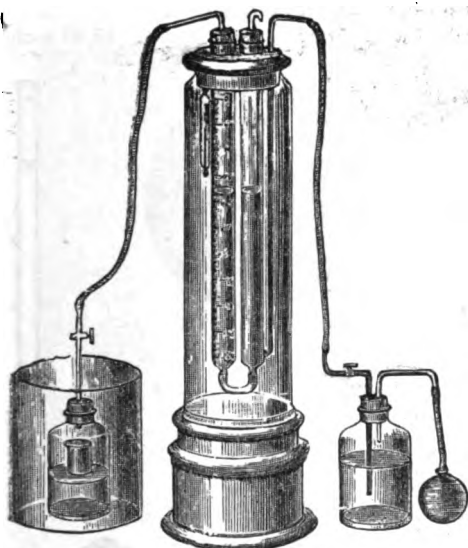
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5287

- \* 5286. Apparatus, for the determination of Nitrogen in organic analysis, according to Will & Varrentrapp, consisting of a combustion furnace with combustion tube and nitrogen bulbs, complete ..... \$4 00
- \* 5287. Apparatus, for the determination of Nitrogen in organic analysis, according to Dumas, a combustion furnace, combustion and delivery tube, porcelain pneumatic trough, graduated eudiometer tube, and wooden support for same, complete ..... \$7 50

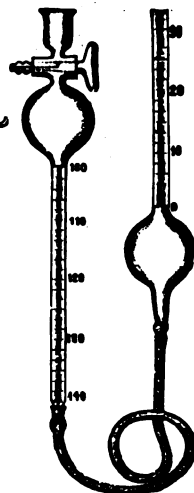
- \* 5288. Apparatus, for vapor density determinations, Victor Meyers, inner tube..... \$1 00  
 Outer bath ..... 1 00  
 ○ Small glass-stoppered vials, dozen..... 1 20  
 \* 5289. Apparatus for Nitrogen Determination, Azotometer or Nitrometer, according to Schiff..... 3 50  
 \* 5290. Ditto, ditto, according to Lunge, 100 c.c. with support, new form..... 8 50  
 See also No. 5268 and 5375.  
 \* 5291. Ditto, ditto, according to Knopp, modified by Wagner..... 20 00  
 5292. Ditto, ditto, according to Professor Johnson, complete with jacket..... 12 00  
 Support for same, \$4 50 extra.  
 Ditto, ditto, according to Kjeldahl, see Appendix, page 291.



5291



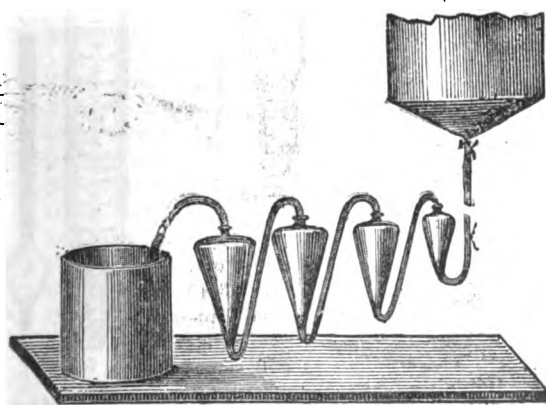
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5290



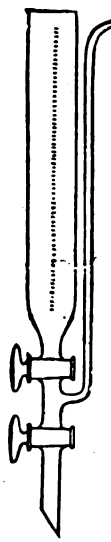
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5300



5295

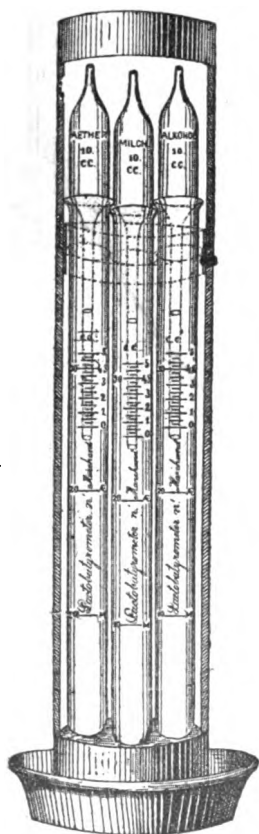


5303

- 5293. Apparatus, to heat substances under pressure, made of hydraulic metal, lead lined, to stand 2,000 lb. pressure, capacity 1 pint..... \$30 00  
 ○ 5294. Ditto, with bath..... \$12 00 extra.  
 \* 5295. Apparatus, for the analysis of Soils, according to Schultz..... \$2 50  
 ○ \* 5300. Apparatus, for the analysis of Soils, according to Noebell..... \$4 00  
 ○ 5301. Apparatus, with support..... \$6 00  
 5302. Apparatus, with aspirator and jar..... \$12 00  
 \* 5303. Apparatus, for mechanical analysis, according to Thoulet..... \$7 50

## APPARATUS FOR THE ANALYSIS OF MILK.

- \* 5304. Apparatus, for testing milk, **Marchand's**, specially arranged for milk inspectors. The cream tubes, pipettes, etc., are packed inside a brass jar, with alcohol cup for raising cold milk to the temperature desired and to make the apparatus portable.....\$10 00
- \* 5305. Cream Tubes, separately.....each, 60 cts., on foot, \$1 00
- \* 5306. Cream Tubes, giving direct percentage of cream.....50 cents.
- 5307. Cream Tubes, giving direct percentage of cream, large with glass foot.....85 cents.
- 5308. Cream Tubes, according to **Gerber**.....each 60 cents.
- 5309. Lactodensimeters, N. Y. Board of Health.....each 50 cents.
- 5310. Lactodensimeters, N. Y. Board of Health, with thermometer.....\$2 00
- 5311. Lactodensimeters, **Quevennes**, with thermometer.....\$2 00 each.



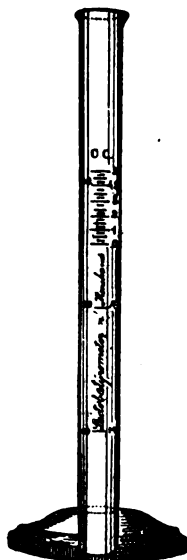
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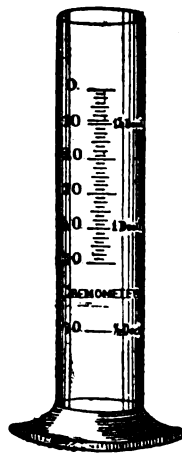
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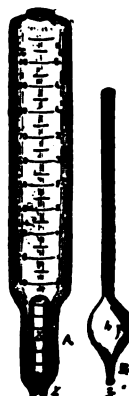
5306



5305



5312



5313

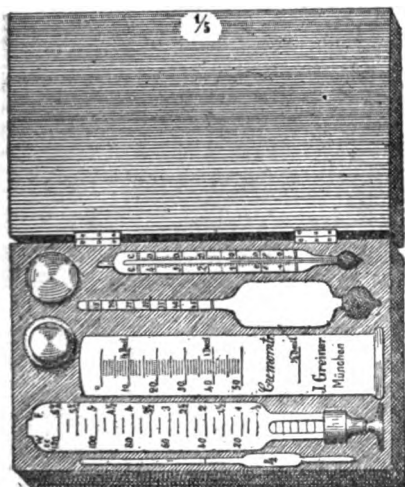
- \* 5312. Creamometer, **Chevalliers**, with red lines.....\$1 00
- \* 5313. Lactoscope, **Professor Feser's**, in polished wooden case with metal foot, latest form.....\$3 40
- 5314. Lactobutyrometer, **Caldwell's**, graduated tube with rubber stopper, 2 pipettes and one cylinder, complete.....\$2 50
- \* 5315. (Pioscope) milk tester, **Professor Heeren's**, for approximate tests...50 cents.
- \* 5316. Lactobutyrometer, after **Professor Soxhlet**, with guaranty of correctness by the Professor, with 2 normal hydrometers, support, rubber bulbs, cooler, 12 numbered bottles, wash-bottles, pinchcocks, etc., complete See fig. 5191.  
The two hydrometers alone.....\$12 00

- \* 5317. Complete milk-testing apparatus, for inspectors, etc., consisting of Feser's lacto-scope, lactodensimeter, thermometer, cylinder, complete with instructions in leather case.....\$12 00

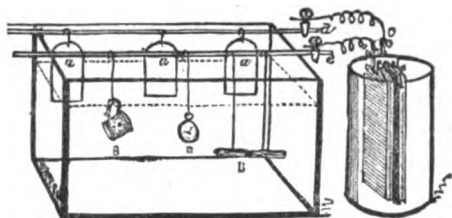
See also, Hofmeister dishes, Soxleth's extraction apparatus.

- \* 5318. Apparatus for generating Gasoline Gas, (see also furnaces for gasoline gas) will furnish gas for blast purposes, glass-blowing, and if connected with a gas-holder like No. 6484, will answer to perfection; if burned in a modified Bunsen burner, like coal gas.

- a. Small generator.....\$6 00  
 ○ Small generator, complete with blower, tubing, etc.....\$12 00  
 ○ b. Large generator .. \$15 00, complete with blower, \$22 00



5317



5319

- \* 5319. Electro-Plating Apparatus, for silver-plating, etc., including the following:

2 No. 1, Smee Batteries .....	\$6 00	1 Sand Brush .....	\$ 45
1 Extra Glass Cup .....	50	1 Fine Brush .....	45
2 Rods, 18 inches long, with connections	1 00	3 Burnishers, assorted.....	3 00
2 ten feet Conducting wires.....	20	1 Pound Hanging Wire.....	60
1 Book of Instructions .....	1 00	1 Box of Pumice Stone.....	25
1 Glass Funnel.....	65	1 " Whiting.....	25
1/2 Pound Quicksilver.....	40	1 " Rouge.....	50
1 Glass Rod .....	25	1 " Crocus.....	25
1 Graduate Glass.....	60	1 Quart Silver Solution.....	2 50
1 Scratch Brush.....	1 00	1 Silver Anode.....	1 00

, Complete Outfit.....\$30 00.

Apparatus compounded, according to Fresenius, Bunsen, Hempel, Winkler, etc., set up according to their instructions correctly, ready for use with tubes filled, etc., at very reasonable rates.

Apparatus, for qualitative analysis, volumetric analysis, blow-piping, for assaying, etc. (*See Appendix.*)

Apparatus, of any description to order.

## APPARATUS FOR THE INVESTIGATION OF MICROORGANISMS.

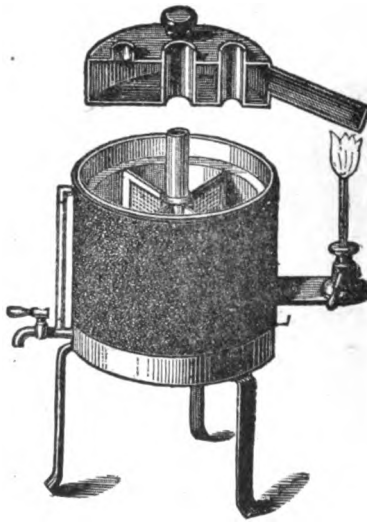
According to Doctor Robert Koch.

- \* 5320. **Steam Sterilization Apparatus**, as designed by Dr. R. Koch. Large size, felt covered, with stop-cock and gauge, price \$18 00, with thermometer, \$20 00,

Directions for using: Fill the apparatus with water to point indicated on gauge, place the helmet on, having previously inserted in it a thermometer; apply heat, and when the thermometer has reached 100° C., (which will be indicated by escaping steam) then the material should be put in, but no sooner. The hooks on the side serve as supports for the material, or the latter is placed in the inner vessel.



5320

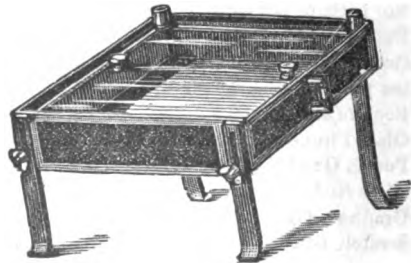


5321

- \* 5321. **Steam Sterilization Apparatus**, for Blood Serum, as designed by Dr. R. Koch, with gauge, stop-cock and felt covering. Price.....\$20 00

Directions for using: Fill both cover and apparatus with water, being careful to keep the inner space perfectly dry. By means of two burners raise the temperature to 60° C., the blood serum contained in the sterilization glasses which have been sterilized in apparatus 5323) is placed in the hollow space of the apparatus, the helmet placed on, and the inner temperature raised as quickly as possible to 58° C. (consequently it is not advisable to place too many tubes in at one time.) The blood serum must remain perfectly liquid, therefore the temperature must not be raised above 60° C.

- \* 5322. **Apparatus for Solidifying Blood Serum**, as designed by Dr. R. Koch, to take from 50 or 100 tubes, the whole apparatus covered with felt, having glass cover and movable legs. Price.....



5322

large, \$20.00

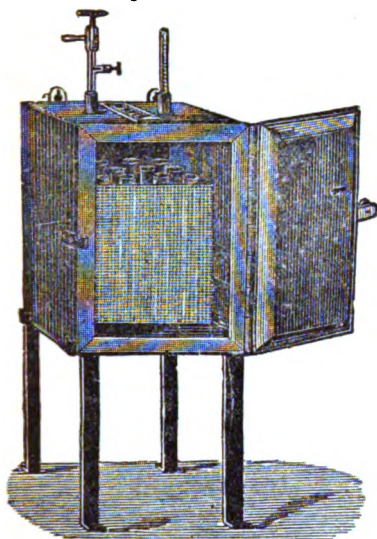
Directions for using: The blood serum having been sterilized in apparatus No. 5321 is put in this apparatus (laying the tubes in a slanting position) and heated to 65° to 75° C. The serum as a result of this treatment must become a transparent solid, therefore the heating has to be continued, and the tubes frequently examined, until this result has been attained. The small quantity of water which forms is allowed to remain as it serves as a Nutritive (Nachboden.)

N. B.—Prices given are for the large size made of tin, or the small size made of copper. The small size of tin is 20 per cent less. The large size of copper 50 per cent additional.

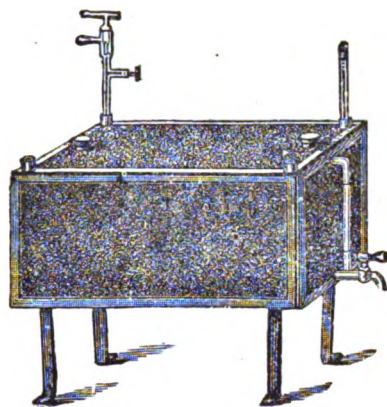
- \* 5323. **Double-Wall Sterilization Apparatus**, for sterilizing at higher temperatures, according to Dr. Koch. Large size with 3 shelves, iron rod and fork to support burner, hooks to fasten against the wall, and 4 legs to set on table, complete. Large \$25.00. Small, \$15.00

This apparatus is used to sterilize the vessels, intended to receive the matter to be worked with, viz.: The receivers for the blood serum, Erlenmeyer's flasks, glass plates for the nutritive gelatine, supports, etc. The sterilization tubes closed by a stopper of pure cotton are placed in the galvanized frame (see No. 5324), the frame is put into the apparatus and heated for one hour to 140° C. (the cotton will carbonize slightly). The glass plates for the water investigations are placed into the covered iron box (see No. 5325), and heated as above.

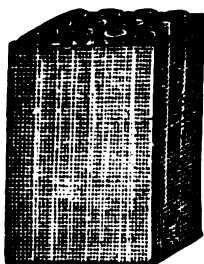
The Erlenmeyer's flasks closed with cotton stoppers are heated directly in the apparatus to 1400 C.



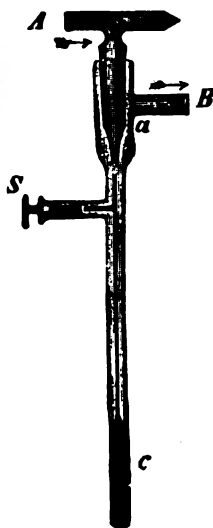
5323



5326



5324



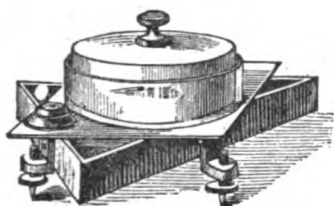
5327



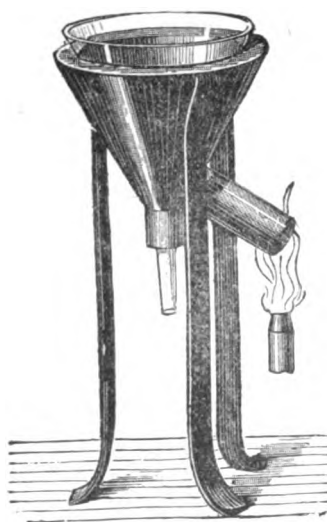
5325

- \* 5324. **Basket of Tinned metal** for receiving the sterilization tubes.....each \$0 60  
(As described in 5323).
- \* 5325. **Metal Box** to receive the glass plates to be sterilized (see 5323).....each 2 00  
10 glass plates to fit ..... 30
- \* 5326. **Vegetation Apparatus** of lead lined metal with glass and felt covering on legs, large size, complete, with water-gauge and stop-cock..... 30 00
- \* 5327. **Thermostat** (Temperature regulator) according to Prof. Reichert.... 2 50  
5327a. Ditto, ditto, bent at right angle.....\$ 3 00
- N. B.** — Prices given are for the large size made of tin, or the small size made of copper. The small size of tin is 20 per cent less. The large size of copper 50 per cent additional.

* 5328. Thermostat, according to <b>Bunsen Kemp</b> , in metal frame.....	\$3 50
5329. Ditto, all glass.....	2 00
5330. Ditto, simplest form.....	1 25
—* 5330a. <b>Meat Press.</b>	
$\frac{1}{2}$ gall.	$\frac{1}{2}$ gall.
\$3.00.	3.50
	1 gall.
	6.00
—* 5331. <b>Hot Water Funnel</b> , on legs, with funnel made of heavy copper.....	5 00
* 5332. <b>Support</b> for nivellation with mirror plate large size.	
* 5333. <b>Wooden Support</b> \$5.50. <b>Metal Support.</b> see fig. 5332.....	8 00
* 5334. <b>Belljar and Reservoir</b> , with knob. see fig. 5332.....	1 25
<b>Circular Level.</b> .....	2 25



5332



5331



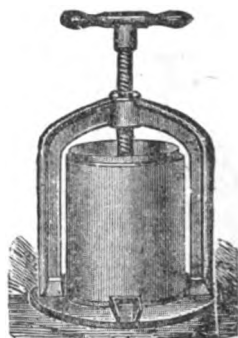
5336



5328



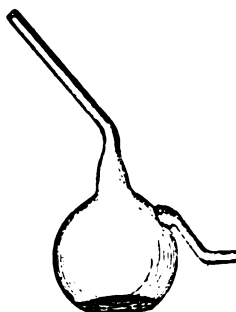
5335



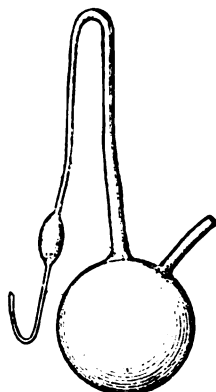
5330a



5339



5337a



5337b

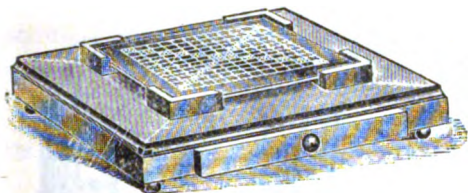
* 5335. <b>Bacterioscopic tubes.</b>	100 CC.	200 CC.	500 CC.
	.50.	.65.	\$1.00.
* 5336. <b>Bacterioscopic flasks.</b>	100 CC.	200 CC.	300 CC.
	.25.	.30.	.40.
			.50.
* 5337. Ditto, like a or b with side neck.	100 CC.	200 CC.	300 CC.
	.50.	.65.	.75.
			\$1 00.

See also page 366.

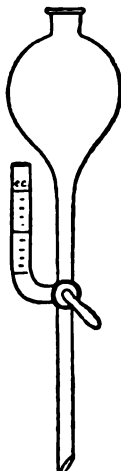
5338. <b>Cultivation tubes</b> according to Pasteur with ground cap and ground tube. Each.....	75 cents
* 5339. <b>Cultivation flasks</b> with ground helmet.	
50 CC.	100 CC.
.40.	.50.
* 5340. <b>Wetchamber</b> , (a set of two flat dishes one with knob being a cover, see fig. 5332).....	3 inches ..... 25c. .... 10 in..... 1 25



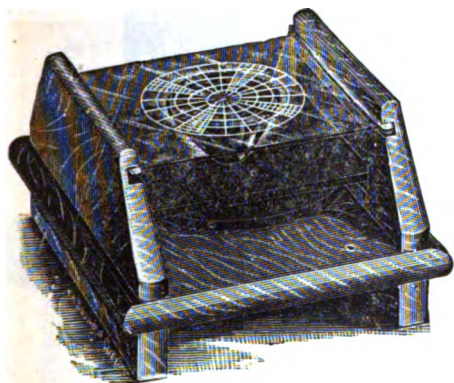
5341. Wetchamber, without knob, set of two, 3 in. 25c.	4 in. 40c.	6 in. 55c.	10 in. \$1 15
5341a. Ditto shallow (Petri dishes).	2½ .20	3 .25	4 .35
		6 inches. .50	
5342. Plates for counting Bacterias			1 25
* 5342a Apparatus for counting bacteria, Wolfshuegel's on mahogany stand. ....			5.00
* 5342b Mason, Miller, McPherson's .....			12.00
Mignels flask for same .....			.75
* 5342c Separator, Treskow's, for nutritive gelatine.			
250	500	750	1000cc.
\$2.50	3.00	3.50	4.00



5342a.



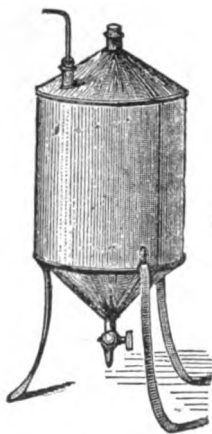
5342c.



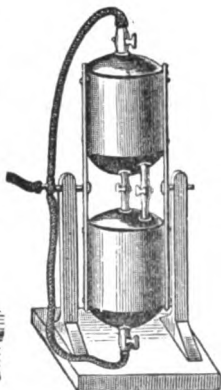
5342b.

- ( 5343. Slides for geletine, plain white glais, 130x65 mm., ..... doz. .45  
 Ditto, ground edge. .... doz. .60  
 Smaller sizes for the microscope see under Microscopic slides.
5344. Glass block with cavity and ground plate. .... doz. 3 00
5345. Glass Benches bent of one piece or glass plates cemented on, to support the slides with nutritive gelatine. .... per doz. 2 50
5346. Glass Dishes with straight sides of best white glass, flat bottom for Wet-chambers.
- |               |      |      |      |      |      |      |       |       |        |
|---------------|------|------|------|------|------|------|-------|-------|--------|
| Diameter, 2½, | 3,   | 4,   | 5,   | 6½,  | 7½,  | 8½,  | 9½,   | 10½,  | 16 in. |
| .12,          | .20, | .30, | .40, | .50, | .65, | .75, | 1.00, | 1.85, | 5.00.  |
- Round bottom glass dishes same price. See also No. 9247.
5347. Glass Stirrers, assorted sizes. .... \$0 60  
 With Platinum wire fused in. .... each 25 to 30
5348. Glass Jars for solidifying the preparations, see Anatomical Jars.
- Erlenmeyer's Flasks, see Flasks Erlenmeyer's

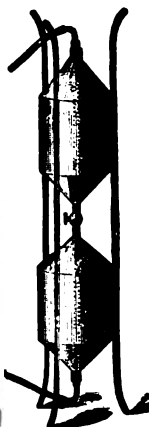
- \* 5350. **Areometer**, Nichols, of glass ..... \$2 00  
 5351. Ditto, ditto, in case ..... 5 00  
 5353. Ditto, ditto, Nichols, of brass ..... 3 00  
 \* 5354. Ditto, ditto, ditto, with glass footed jar to float it ..... 3 75  
 5355. A Set of Decimal Weights for do. 20,0 to 1 Milli. in block, Price ..... 2 20  
       In case ..... 3 50  
 5356. **Arsenic Plates**, of glazed porcelain, round, with rim and handle.  
       Diameter. 1, 1½, 2 inches.  
                   15 cts. 20 cts. 25 cts.  
 \* 5357. **Arsenic Tubes** all forms, of German glass. .... 40 cts.  
       Per dozen, a, b, c, d .....  
 5358. **Asbestos**, etc. Board 1-32, 1-16, ¼, 3-16, ½ inch, 1 yd. wide. 20 cts. per pound.  
 5359. Ditto, 1-16 in. Thick cut.  
       4x1, 6x6 inches.  
       40 cts. doz. 75 cts. doz. or 40 cts. per pound.



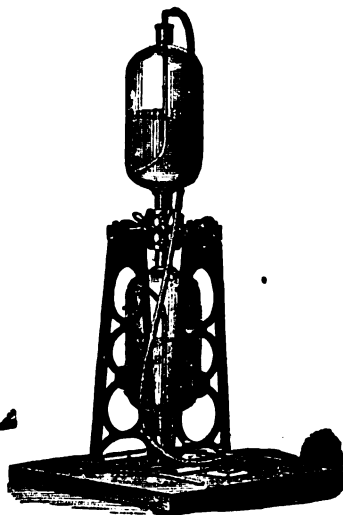
5362



5364



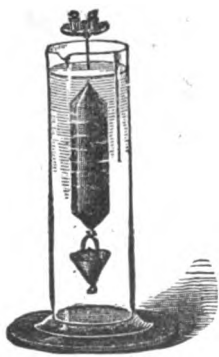
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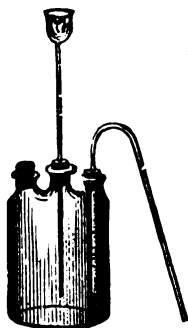
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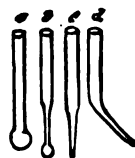
5350



5354



5361



5357

5360. **Asbestos**, paper, per sheet...5 cts. .... pound, 20 cts.  
 \* 5361. **Aspirator** with syphon and funnel tube, **Liebig's form**, according to  
       size. Quart, \$1 50. ½ Gallon, \$2 00. Gallon.....3 25  
 \* 5362. Ditto, ditto, of Zinc japanned 10 Litres capacity ..... \$5 00  
 \* 5362a. Ditto, ditto, 20 Litres ..... 9 00  
 \* 5363. **Aspirator**, double, metal frame, glass receivers, best Laboratory aspirator  
       revolving on axes for continuous suction 10 Liter capacity ..... 70 00  
 \* 5364. **Aspirator**, after Magnus, double; for continual suction; without  
       changing connectors, reservoirs of zinc of 10 Liter capacity each. Price. 25 00  
 \* 5365. **Aspirator** of Zinc double with two tripots to be reversed for continuous suction.  
       Capacity, 10 Liter, 20 Liter.  
                   \$9 00 12 50.

- \* 5366 **Aspirator Bottles**, tubulated on foot, of very heavy German glass, with large tubulature for stopper.

Contents, 4 oz.  $\frac{1}{2}$  pint, 1 pint, 1 quart,  $\frac{1}{2}$  gal. 1 gal. 2 gal. 3 gal. 5 gal. 8 gal.  
 .30, .35, .45, .65, .85, 1.30, 2.25, 3.60, 7.00, 10.00

5367. Ditto, ditto, with narrow outlet to connect with Rubber Tubing direct.  
 pint. quart.  $\frac{1}{2}$  gal.  
 .45, .65, .85.

- \* 5368. Ditto, ditto, with stopper and glass stop-cock ground into the outlet.  
 Contents,  $\frac{1}{2}$  pint, 1 pint, 1 quart,  $\frac{1}{2}$  gal. 1 gal. 2 gal. 3 gal. 5 gal. 8 gal.  
 \$1.60, 1.80, 2.00, 2.50, 3.50, 5.00, 6.50, 10.00, 13.00

- \* 5369. Ditto, ditto, with two necks.  
 Contents, 1 pint, 1 quart,  $\frac{1}{2}$  gal. 1 gal. 2 gal.  
 .80, 1.20, 1.60, 2.60, 4.00

Ditto, ditto, with 3 necks 10 per cent. higher.

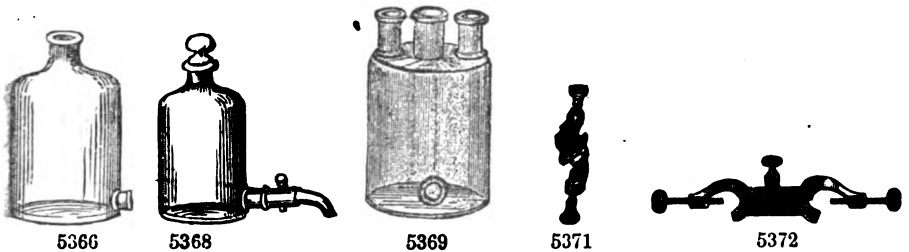
5370. **Aspirator Bottles with two tubulatures** near the bottom, one opposite the other.

Capacity, 1 quart,  $\frac{1}{2}$  gal. 1 gal. 2 gal.  
 Each, \$1.00, 1.50, 2.00, 3.25

Aspirator Bottles of stoneware with stopper and stop-cock.  
 5 gal. capacity, \$9.00.

- \* 5371. **Attachment of Iron**, with 2 Brass screws, indispensable to attach a rod vertically or horizontally to any Iron Support.

Small. Large.  
 .20, 25 cts.



- \* 5372. Ditto, Universal double joint. \$0 50

5373. **Azotometer, Johnson's**, complete with jacket. 12 00

Ditto, ditto, mounted on heavy iron support. 15 00

- \* 5374. **Azotometer, G. Lunge's**, see "Winkler's Gas Analysis" the glass parts.

50 CC. in 1-5. 100 CC. in 1-5.  
 \$4 00. 5 00.

Ditto, with support. 6 50. 7 50.

See figure 5568.

- \* 5375. **Azotometer or Nitrometer: Lunge's**, for testing the commercial value of Saltpeter. 100 CC. in 1-5 with patent stopcock. \$6 00

Ditto, with support. 8 50

See figure 5290.

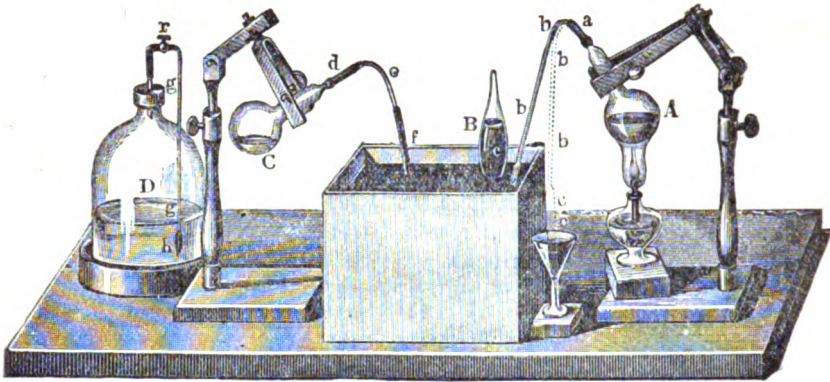
- \* 5376. **Azotometer or Nitrometer**, according to Knopp; modified by Wagner; complete on support. \$20 00

See figure 5291.

- \* 5377. **Azotometer**, according to Schiff, on wooden base, with reservoir bulb. 4 50

See Figure 5289.

- \* 5378. Azotometer, according to Schulze, (determination of nitric acid) by means of aluminium, complete..... \$9 04

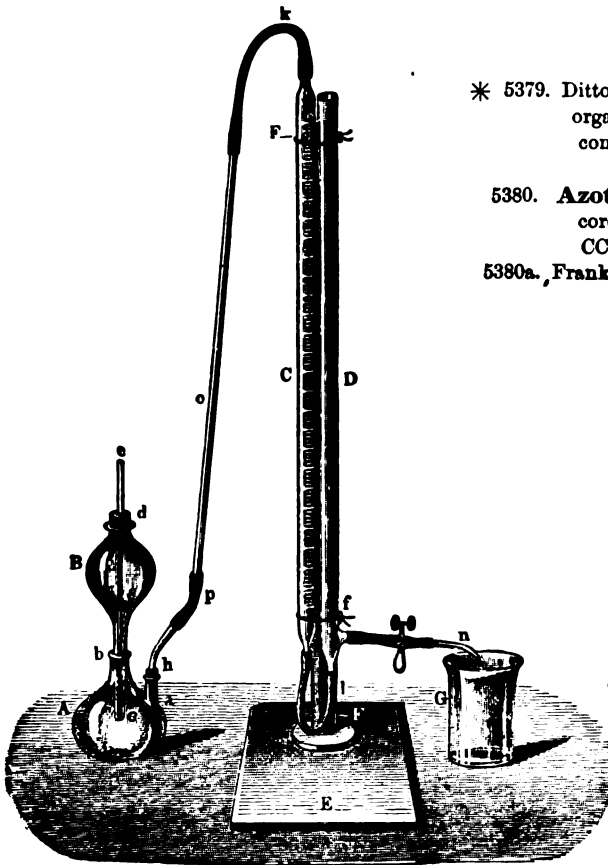


5379

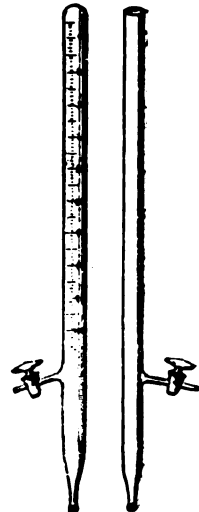
- \* 5379. Ditto, for Nitric acid in presence of organic substances, after Schlösing complete as per sketch.... \$15 00

5380. Azotometer or Nitrometer, according to Allen; divided in 50 CC. in 1-5 CC..... \$3 20

- 5380a. Franke's Nitrometer..... 10 00



5378



5381

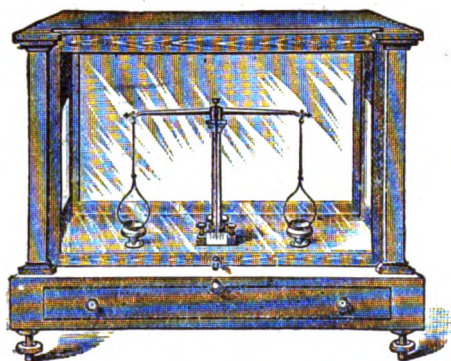
- \* 5381. Azotometer or Nitrometer, according to Zulkowski.

a, without stop-cocks but with graduation.....	\$1 75
b, without stop-cocks and without graduation.....	1 00
c, with stop-cocks and with graduation.....	4 00
d, with stop-cocks and without graduation.....	3 00
Support for set of 2.....	3 50

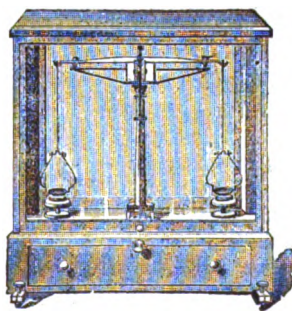
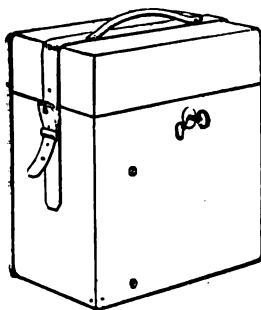
## BALANCES OF PRECISION.

*For Assaying, Analytic, and all other scientific work, manufactured and adjusted by Becker & Sons, Henry Troemner and the best German scale builders, sold at manufacturer's lowest cash figures. These Balances are too well known to say more about their quality here. We mention only, that we take any guaranty for their utmost adjustment and accuracy.*

- 5382. **Pocket Assay Balance**, including weights 10 grammes to 1 milligramme, neatly fitted in box, measuring 6 inches long, 2½ inches high. Like our No. 5412.....\$18 00



5383

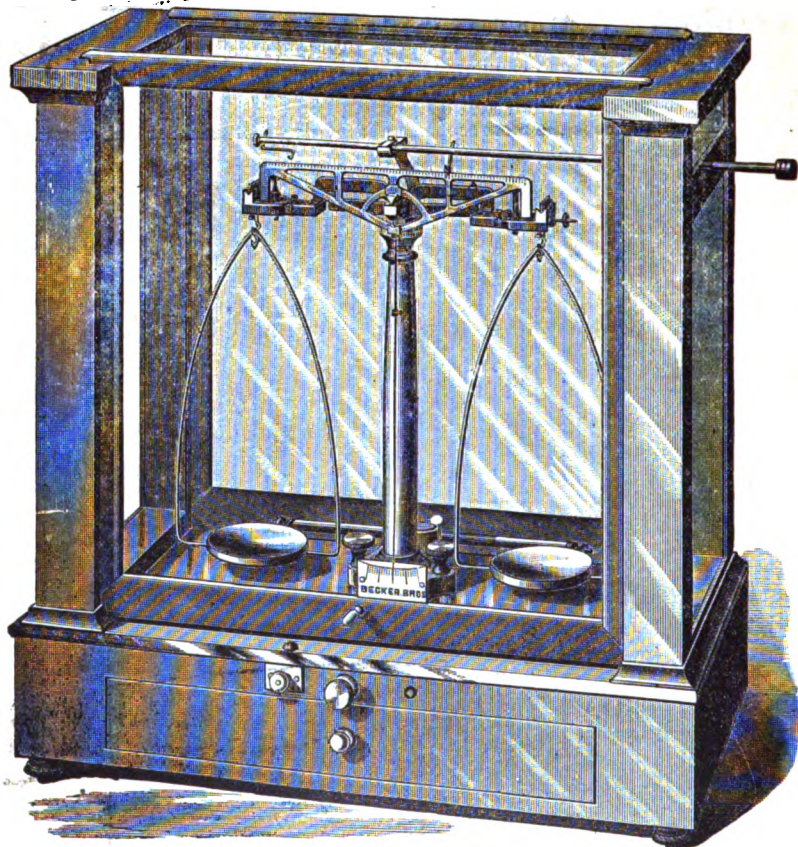


5384

- \* 5383. **Becker's No. 1, or Troemner's No. 1, Assay Balance**, in French polished glass case, sliding frame counterpoised; can be charged up to twenty-five grammes in each pan; deviation of needle on scale, 5 divisions for 1 milligramme; steel knives with agate bearings.....\$55 00  
     With rider arrangement, \$10 00 extra.
- \* 5384. **Assay Balance, Becker's No. 2, or Troemner's 132**, in glass case, polished mahogany, expressly constructed for travel, case, beam, column, and pans folding in mahogany box, sensible to 1-20 milligramme, complete..... 65 00
- 5384a. **Ditto, ditto**, with weights from 10 grammes down to 1-10 milligramme, and rider arrangement... .. 75 00

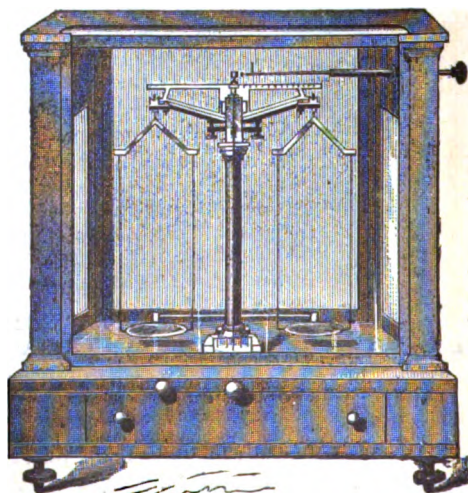


- \* 5393. **Analytical Balance, Becker's, new pattern, Short beam, for rapid weighing, capacity 200 grammes sensitive to 1-10 milligramme, built very substantially, with glass plate in bottom of case, agate knife edges, beam graduated on both arms; width of pan support, 4 in. ....** \$125 00



5393

- 5394. Ditto, with adjustable shelf for supporting beaker for specific gravity ..... \$138 00
- 5395. Ditto, ditto, best German make ..... \$100 00
- 5400. Ditto, ditto, most elegantly mounted, with heavy plate glass doors, opening all around, gilded trimmings, agate knife edges ..... 150 00
- \* 5401. **No. 11 Balance, Short Arm, both arms of beam are graduated into 1-10 milligramme; Beam is of Aluminum, all bearings of "Agate"; capacity 200 grammes, sensibility 1-10 milligramme; the bows and pans of nickel, bows are 4 in. wide; fine French polished Mahogany case, etc., etc.**  
Price, \$98 00



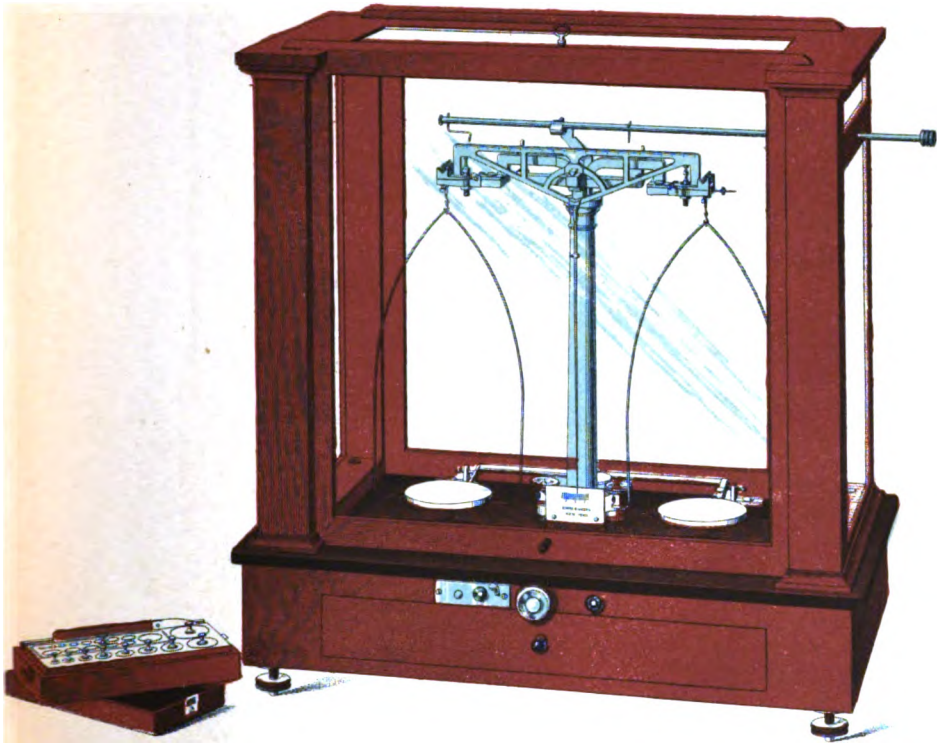
5401

NEW

**NON - CORROSIVE**

**ANALYTICAL BALANCE.**

All metal parts COVERED WITH GOLD. Nothing but GOLD and AGATE exposed to acid fumes.



**No. 5393 A.** This is the well known Dutch type of balance, with most important modern improvements. Has a **BLACK GLASS PLATE BASE**, which is invaluable for locating riders and small weights when dropped.

**CARRYING CAPACITY, 200 Grams in each pan.**  
**SENSIBILITY, One-twentieth of a milligram.**

Case is of solid Mahogany, with top light and locks.

Price of the Balance, - - - - - \$125.00

" with one set of **NON-CORROSIVE** Platinum weights,  
from 100 Grams down to 1 Milligram, - - 135.00

The **SMALL** Weights are **SOLID PLATINUM**, and the **LARGE** ones are **PLATINUM-COVERED**.

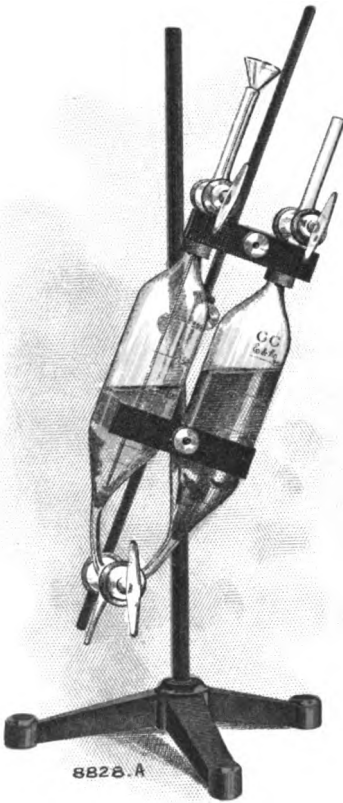
**EIMER & AMEND,**

~ NEW ~

**No. 8828 A. PIPETTE** according to ROTHE, for the rapid estimation of IRON by means of ETHER.

Price, - - - - \$12.00

Complete on support for shaking, 15.00



8828.A

THESE ARE SPECIMENS

OF THE

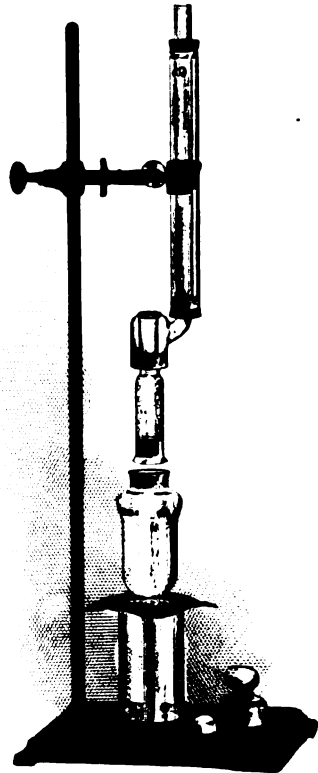
**HIGH GRADE**

**SCIENTIFIC**

**GLASS BLOWING**

DONE ON OUR

PREMISES.



5192.A

**No. 5192 A.**

**BOILING POINT APPARATUS** according to Dr. B. H. HITE.

A thermometer READING TO ONE THOUSANDTH OF A DEGREE, SHOWS NO VARIATION in the temperature of a liquid in the tube.

Price, - - - - \$9.00

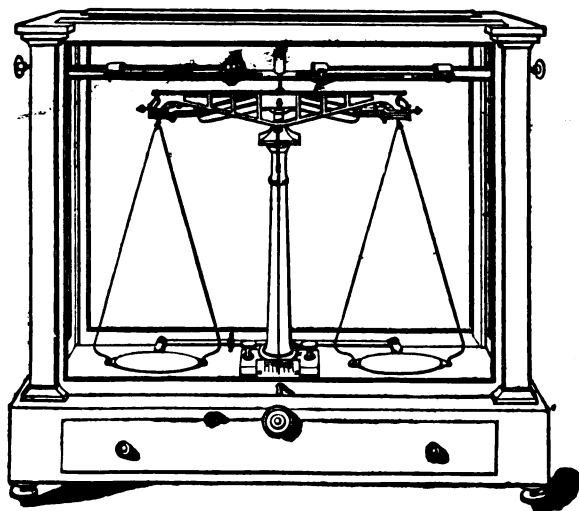
With Support, - - - 10.00

**EIMER & AMEND.**

Digitized by Google  
New York City.



- 5402. **Balance Analytical Becker's Short Beam.** For a charge up to 200 grammes in each pan, sensible to 1-20 milligramme. **Aluminum and glass case, front sliding frame and glass top.** All parts are of aluminum, mounted on 5-15 inch glass plate, beam 6 inches long, graduated in 1-10 milligramme. Agate planes and agate knife edges; provided with new improved arrangement for arrest of pans and beam, arrangement for riders, specific gravity, and weighing tubes, pans 2½ inches diameter, bows 4 inches wide.....\$160 00
- \* 5403. **Aluminium Balance, Troemner's No. 6, (New.)** Balance of the very finest construction—capacity 200 grammes in each pan and sensible to the 1-20 milligramme—new and improved rider arrangement—both arms of the beam are divided—all bearings are of "agate" all knife edges also of agate, no steel used whatever.—The Beam, Bows, Pans, etc., made of pure aluminium all the other parts are plated with gold making the entire Balance proof against rust or corrosion—the advantage of aluminium is great lightness with rigidity, ensuring highest attainable sensibility with a heavy load etc., etc., pan supports are made to prevent elongation when loaded—mahogany case etc., with glass top to admit light freely. Beam 12 in. Pans 3 in. Price (long or short arm) .....150 00
- 5404. **Becker's No. 8 or Troemner's No. 1, Analytical Balance,** for 200 grammes in each pan; sensible to 1-20 milligramme with its full charge. Provided with arrest for pans, apparatus for specific gravity, rider and weighing tubes, beam divided in 1-10 parts of milligrammes, pans 3 inches in diameter .....\$105 00
- 5405. **Becker's No. 9.—Ditto,** with adjustable shelf for supporting beaker with water when taking specific gravities .....\$117 00  
With agate knife edges, \$10 00 extra.



5403

- 5406. **Becker's No. 10.—Balance for scientific use, for a charge up to 500 grammes in each pan;** sensible to 1-10 part of a milligramme with its full charge; glass case as those before, all bearings agate planes. Provided with arrest for pans and beam, apparatus for taking specific gravity, rider and weighing tubes, beam divided in 1-10 parts of milligrammes, pans 4 inches in diameter. \$132 00
- 5407. **Becker's No. 11.—Ditto,** with adjustable shelf for supporting beaker with water when taking specific gravities .....\$145 00
- 5408. **Becker's No. 13.—Balance for scientific use, in glass case for a charge up to 10 kilos in each pan, sensible to 1 milligramme with that charge, pans 9 inches in diameter** .....\$420 00

**Balances imported duty free from all the celebrated European makers, viz.: Becker's Sons, Oertling, Bunge, Verbeck & Petzhold, Sartorius, G. Kern & Son, for whom we are the sole agents in the United States. All of above balances if provided with agate knife edges \$10 00 extra.**

**Note.**—See also Supplemental Catalogue, page 275.

## BALANCES.

*For Pharmaceutical, Bullion, Specific Gravity, Gold, Sugar and other purposes where accuracy is required.*

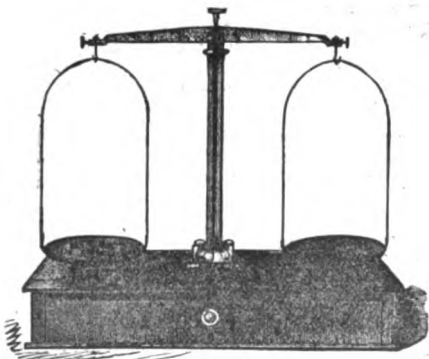
- \* 5409. **Balance**, sensitive to 1-50 grain, (1 milligramme) and 1-20 for the larger sizes, Dutch style, with adjusting screw, on **polished mahogany box**. The finest and best adapted balance made for general laboratory work, assaying, etc. The accuracy, practical arrangement and reasonable price make this balance highly recommendable.

To Weigh,

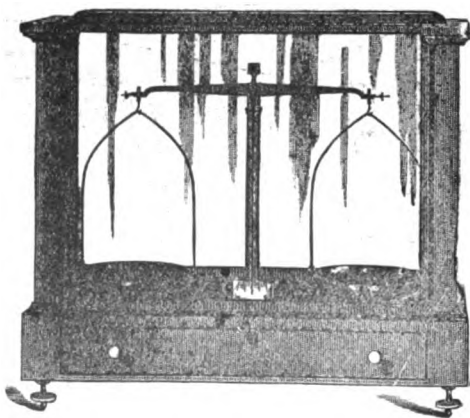
	3 oz. or ○ 75 grm.	6 oz. or ○ 180 grm.	10 oz. or ○ 300 grm.	20 oz. or ○ 600 grm.	50 oz. or ○ 1500 grm.
— 5410. With set screws,	\$11.00	15.00	18.00	22.00	26.00
	12.50	17.00	20.00	24.50	28.75
— * 5411. In glass case front sliding door,	\$22.00	25.00	28.50	34.00	39.00

The 180, 300 and 600 gramme sizes without the glass case are the assayers pulp scales.

The 300 and 600 gramme sizes in Glass case are the Sugar balances.



5409



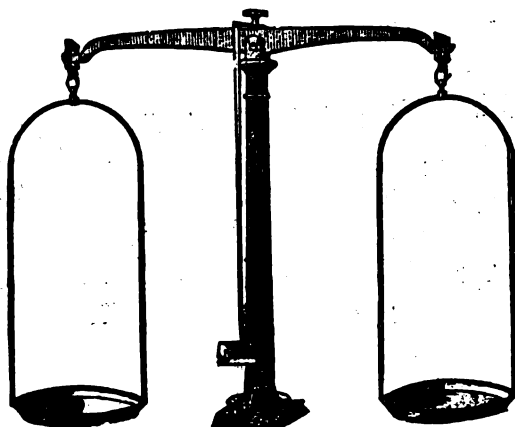
5411

- 5412. Becker's No. 29.—**Bullion and Specie Scale**, carrying 500 ounces in each pan; sensible to 1 grain with that charge, all bearings, planes, with new improved construction for the arrestation of the beam. Provided with arrest for pans, set screws and level.....\$165 00
- 5413. Becker's No. 30.—Ditto, ditto, in glass case, sensible to  $\frac{1}{2}$  grain.....\$250 00
- 5414. Ditto, ditto, for 2000 ounces in each pan, sensible to 2 grains with that charge.....\$220.00
- 5415. Becker's No. 32.—Same, in glass case, sensible to 1 grain.....\$310 00
- 5416. Becker's No. 33.—Ditto, ditto, for 3,500 ounces in each pan, sensible to 2 grains with that charge.....\$600 00
- 5416a. Becker's No. 34.—Same, in mahogany glass case, French polished, with counter-poised front sliding frame, sensible to 1 grain with that charge.....\$750 00

- \* 5417. **Diamond Scale**, small folding in case for carrying conveniently in pocket.  
Price ..... \$15 00
- \* 5418. **Balances**, according to Prof. Mohr's system, for assaying, laboratory and prescription work, all brass, beams with prismatic steelbearings; sensible to 1-20 of a grain, by a charge up to two pounds, beam perforated with balancing wires..... 16 50

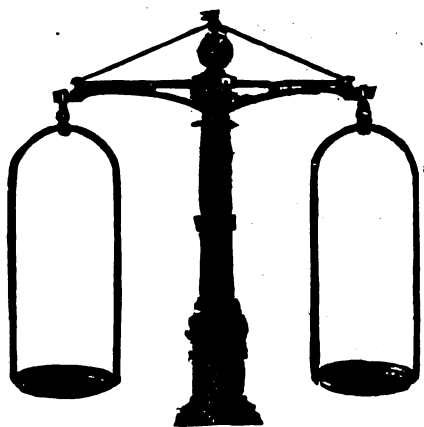


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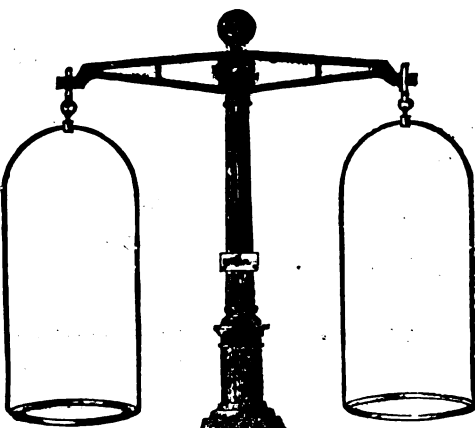


5420

- \* 5419. Ditto, ditto, ditto, without balancing wires; sensible to 1-20 grain..... 15 50
- \* 5420. Ditto, ditto, ditto, with solid beam; sensible to 1-20 grain..... 14 50



5418



5419

We have movable hard rubber pans for Balances mentioned above; they are used to protect the metal pan from acids, etc., for which we make an additional charge of 75 cents per pair, if ordered with Balance.

- Above scales if ordered nickel plated.....20 per cent. extra
- Polished mahogany cases with two drawers for above.....\$5 00

## \* 5421. Scales, hand of brass, best German,

Length of Beam,	4,	4½,	5,	6,	6½,	7½,	inches,
Price,	\$1 20	1 30	1 60	1 75	2 00	2 25	piece.

Length of Beam,	8½,	9½,	10½,	11½,	12	inches.
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Price,	\$2 50	2 80	3 50	3 75	4 00	piece.
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## \* 5422. Scales, with saddle, weight very exact, 5 gra. in 1-10 gra.,.....piece, 3 00

5423. " " " " " 30 " ½ " " " 3 50

5424. " " " " " 25 centimeters, in ½ centigramme " 3 00

## 5425. Saddle Scales, of new construction, very accurate beam graduated on both sides to weigh grammes and grains with one sliding weight.

Length of beam,	7	8	9	10	11	inches.
-----------------	---	---	---	----	----	---------

To Weigh. {	1-10 to 5 gra.	½-30 gra.	½-60 gra.	1-120 gra.	1-240 gra.
	and	and	and	and	and
	½ milli. to 25 centi.	5-15° centi.	5-500 centi.	1 deci. 10, o.	1 deci.-15, o.
	\$3 40,	4 25,	5 00,	6 00,	7 00.

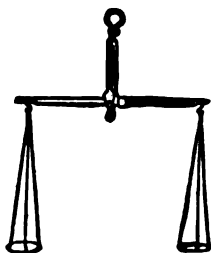
## \*—5426. Balances, with sliding weight on graduated side beam. Beam divided for grain and metric system. Plated pans 4 inches diameter, to weigh up to 8 oz. The scale is sensitive to 1 grain, and is accompanied by a set of weights (grammes or grains), fitted into the base.

Price, complete.....\$8 00

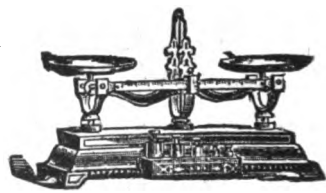
—5426a. Ditto, without slide, Laboratory scale, pans 6 inches, ½ gr. to 1 lb..... 9 00



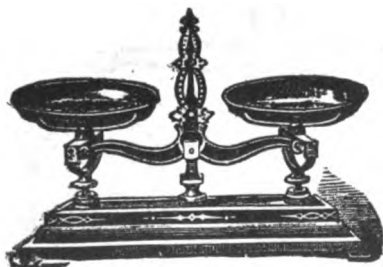
5421



5422



5426



5429



5430

—5427. Balance, (solution scale) same as above to weigh up to 1 Kilo.....\$12 50

—5428. Ditto, ditto, to weigh up to 5 Kilo..... 18 00

## \*—5429. Ditto, ditto, for coarse weighing, platform scales, French manufacture, weighing up to

	1	2	5	10	20	40	pounds.
Diameter of pans,	4½	5	5½	7½	8½	10½	inches.
	\$2 60,	2 90,	3 50,	4 65,	5 50,	8 00.	

5429a. Balance, iron double platform, with tin scoop, tare and set weights included with weights to 4 lb. \$2 00, 8 lb. \$3 00.

## \* 5430. Balance for druggists; platform scale, in handsome case, with marble top, pans brass or nickel plated.

Carrying capacity,.....	10,	15,	20,	30	pounds.
Size of Pans,.....	7,	8,	9,	10	in.

— Case wood, marble top,.....12 00, 14 00, 16 00, 19 00.

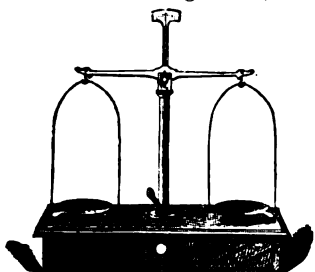
Nickel plated pans \$1.50 to \$2.00 additional.

- \* 5430a. **Balances for prescriptions or physician's office**, with lever on Walnut box with drawer, weighing exact for  $\frac{1}{4}$  grain, this is a much better balance than is sold in the trade generally.

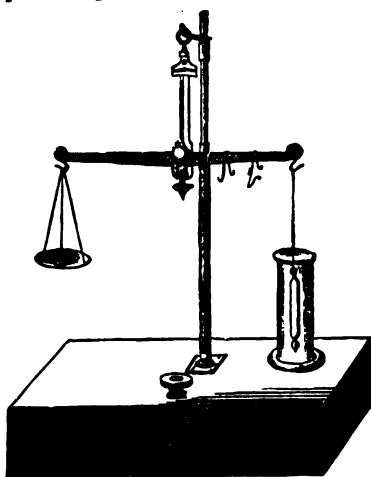
Length of beam,  $5\frac{1}{2}$ , 7, 8 inches.

\$3.50, 5.00, 6 00. including set of Weights.

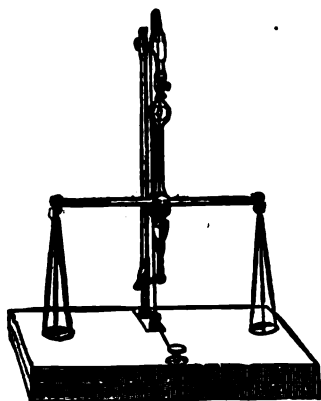
- \* 5431. **Balance, Plattner's, for blow-pipe analysis**; portable in polished wooden box, best German make, complete, especially arranged for traveling, sensible to 1-5 milligr. .... \$20 00
5432. Ditto, ditto, with set of weights, 1 milligr. to 1000 milligr. .... 22 50
- 5433. **Folding Glass Case** for above according to Plattner. .... 15 00
5434. **Balances, Plattner's, Lingke's** (Freiberg) make; beam turning on agate; all metal parts gilded, sensitive to 1-20 milligramme; with portable glass case. Price... \$75 00



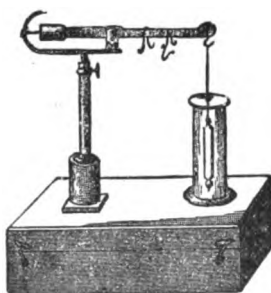
5430a.



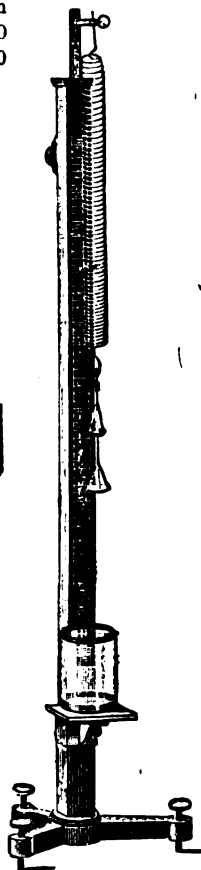
5436



5431



5437



5435

- \* 5435. **Balance, Jolly's Spiral**, for rapid determination of specific gravity of minerals, etc. .... \$17 00
- \* 5436. Ditto, ditto, for determination of specific gravity according to Prof. Mohr, for solid and liquid bodies, best German manufacture, in polished box, glass body with thermometer. .... \$20 00
- \* 5437. Ditto, ditto, **Westphal's system**, the latest, handiest, and most improved form, for quick determination, in polished wood box, for liquids only, glass body with thermometer. .... \$15 00

**This and all our other specific gravity balances are provided with Reimann's Patent Thermometer body which can be replaced when broken, at ..... \$3.00 each.**

**This balance overcomes all trouble with incorrect hydrometers, and forms an easy means for standardizing hydrometers.**

5438. Ditto, arranged to weigh specific gravity of liquids up to 3,500. ....	\$25 00
5439. Balance, ditto, according Reimann, for the determination of specific gravity of liquids directly by the means of weights. In box.....	\$15 00
5440. Reimann's Thermometer body for above balances .....	3 00
5441. Set of Riderweights for above.....	1 00

## WEIGHTS.

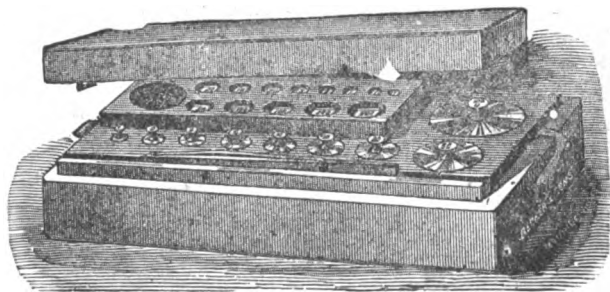
### Gramme and Grain Weights for Scientific work.

#### No. 1 Quality.

In polished boxes, lined with velvet, every piece fitted separately, brass weights lacquered, the fraction of the grammes are platinum, except below 20 milligrammes, which are made of platinum or aluminium, *adjusted to the utmost accuracy.*

— 5442. One gramme to 1 milligramme, all of aluminium.....	\$5 00	
— 5443. One gramme to 1 milligramme, all platina. ....	7 00	
	Ours have the riders	
	Becker's make.	Our make
— 5444. One platinum gramme and down to 1-10 milligramme.....	\$10 50	7 50
— 5445. 10 grammes and down to 1-10 milligramme.....	12 00	9 00
— 5446. 20 grammes and down to 1 milligramme and riders..	14 00	9 00
— 5447. 50 grammes and down to 1 milligramme and riders.	16 00	12 00

— Non-corrosive, platin. plated.  
50 0-0.001 and riders, \$14 00  
100 0-0.001 " " 16 00  
200 0-0.001 " " 24 00



5448.

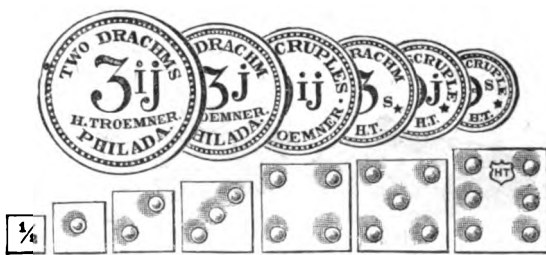
* 5448. 100 grammes and down to 1 milligramme and riders	18 00	\$14 00
— 5449. Becker's No. 6.—Two hundred gramme piece and down to 1 milligramme and riders .....	24 00	18 00
— 5450. Becker's No. 7.—Five hundred gramme and down to 1 gramme, and riders..	28 00	
— 5451. Becker's No. 8.—Five kilo piece and down to 1 milligramme.....	70 00	
— 5452. Ten grain piece and down to 1-100 grain, with riders.....	7 00	
— 5453. Becker's No. 10.—One thousand grain piece and down to 1-1000 grain, with riders.....	\$18 00 our make, \$12 00	
— 5454. Our make.—One thousand grain piece and down to 1-10 grain, with riders..	11 00	
— 5455. Weights, Assay ton, from 4 A. T. down to 1-20.....	6 00	
5456. Set of blow-pipe weights to Plattner's balance, 1000 milligrammes to 1 milligramme, in sliding box .....	\$3 00	
— 5457. Standard Troy ounce weights, 10 ounce to 1-10 grain, in case. Price.....	\$15 00, in block, \$14 00	
— 5458. Ditto, ditto, ditto, 2 ounce to 1-10 grain, in case.....	10 00, " 9 00	
— 5459. Ditto, ditto, ditto, 1 " " " " .....	8 00.	

5460. **Weights, single, analytical.**  
 1.0; 0.5; 0.2; 0.1; 0.05; 0.02; 0.01; 0.005; 0.002; 0.001.  
 .95 .75 .45 .30 .30 .25 .20 .20 .20 .20 cts.
5461. Ditto, ditto, complete set, comprising two each of 0.2; 0.02; 0.002, and one each of the remainder. .... \$4 50
5462. Weights, set of milligrammes in 1-10th comprising 0.0005; 0.0002; 0.0002; 0.0001; per set ..... \$1 00
5463. **Riders, 2 milligrammes, 10 milligrammes, 12 milligrammes.....each, 25 cents.**
5464. **Weights, fractional grains,**  
 1 2 1  
 1 10 grain. 1-20 grain. 1-50 grain.  
 Per set ..... \$1 50
5465. Weights, ditto, 1 2 1 1  
 1-100 grain. 1-200 grain. 1-500 grain. 1-1000 grain.  
 Per set of 4 ..... \$2 00
5465. **Weights, Normal, Sugar, 26,048 or 13,024 (set of two in box, \$2.00) each, \$1 00**

### Gramme and Grain Weights for Fine Weighings. No. 2 Quality.



5467-5468



5477-5477a.

- \* 5467. **Weights, gramme, of best German make, well adjusted;**  
 these weights stand between the analytical and the common weight, and fill a long needed want as they are accurate and cheap.  
 In polished wooden block, the smaller weights under glass cover.  
 Sets of 20 50 100 200 500 1000 grammes down to 1 milligr.  
 \$2 20 2 50 2 85 4 00 6 00 8 00
5468. Weights, ditto, in polished wooden velvet lined cases.  
 20 50 100 200 500 1000 grammes to 1 milligramme.  
 \$3 50 3 75 5 00 6 50 8 00 10 00
- These weights suit Balance No. 5409.
- 5469. One ounce troy down to 1-10 grain. .... \$4 00
- 5470. " "  $\frac{1}{2}$  " N. Y. College of Pharmacy standard. .... 3 50
- 5471. Becker's No. 22.—One thousand grains down to 1-10 grain. .... 7 75
- 5472. Ten ounce Troy, down to 1-10 grain. .... 10 00
- 5472a. Two ounce pieces and down to  $\frac{1}{2}$  grain. .... 5 00
- 5473. Becker's No. 30.—One fifty ounce piece and down to  $\frac{1}{2}$  grain. .... 18 00
- 5474. " 100 " "  $\frac{1}{2}$  " .... 25 00
- 5475. Becker's No. 33.—Two five hundred ounce pieces. .... 52 00

**Weights for coarse weighing, No. 3 quality, in Wooden block for weighing out samples of ores, fluxes, metals, etc., where great accuracy is not essential.**

#### a. Troy Weights.

5476. Troy, German silver,  $\frac{1}{2}$  grain up to 2 grains, per set. .... \$0 20
- \* 5477. Ditto, German silver, 1 grain up to 10 grains, per set. .... 15
- \* 5477a. Ditto, ditto,  $\frac{1}{2}$  grain up to 2 drams. .... 25
5478. Ditto, ditto, 1-2 grain up to 1 oz. (the small ones of German silver,) per set. .... 75 cents.

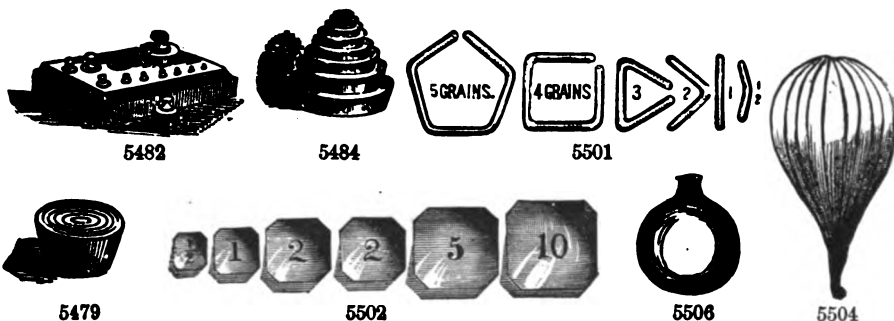
**TROY WEIGHTS. — CONTINUED.**

—* 5479. Ditto, in nests, $\frac{1}{2}$ oz. up to 8 oz., per nest	\$2 00
— 5480. Ditto, ditto, $\frac{1}{2}$ oz. up to 1 lb., (12 oz.) per nest	2 50
— 5481. Ditto, ditto, $\frac{1}{2}$ oz. up to 2 lb., (24 oz.) per nest	5 00

**b. Avoirdupois Weights.**

—* 5482. Avoirdupois, 1-16 oz. up to 1 lb. in wooden block, per set	\$2 00
— 5483. Ditto, 1-16 oz. up to 2 lbs. per set	3 00
— 5484a. " 1-16 " 4 " "	5 00
—* 5484. Ditto, brass cased, $\frac{1}{2}$ oz. up to 1 lb., per set	1 25
— 5485. Ditto, ditto, $\frac{1}{2}$ oz. up to 2 lbs., per set	2 00
○ 5486. Ditto, brass, solid, $\frac{1}{2}$ oz. up to 1 lb., per set	2 00
○ 5487. Ditto, ditto, $\frac{1}{2}$ oz. up to 2 lbs., per set	3 00
5488. Ditto, of iron, in sets from 1-2 oz. to 1 lb.	50
5489. " " " " 1 " 2	75
5490. " " " " 1 " 4	1 25
5491. " " " " 1 " 8	2 00

Ditto, ditto, single weights up to 50 lb. at reasonable rates.

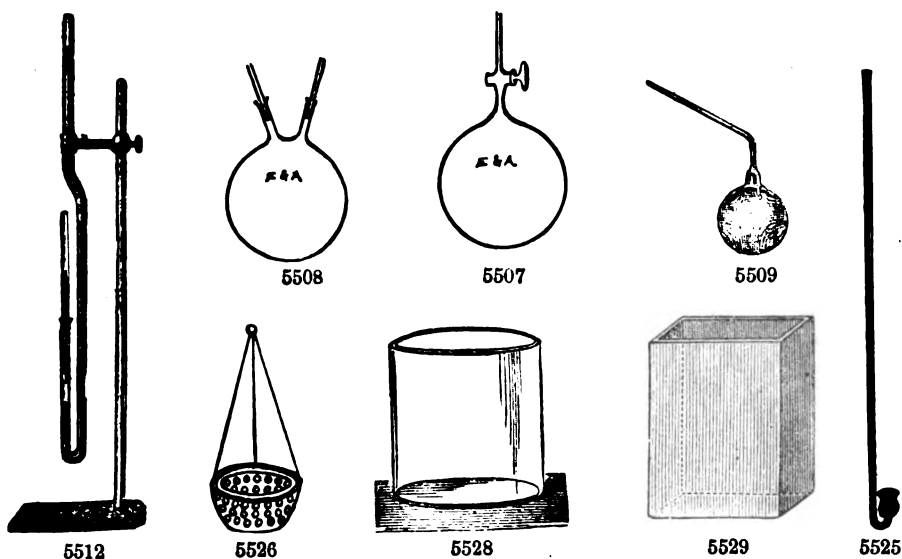
**c. Gramme Weights.**

In Polished Wooden Block, the Larger Weights of Brass.

5492. One centigramme, up to 1 gramme, in paper box, German silver	\$0 50
5492. One " " 20 " "	45 in box 85
5493a. Ditto, ditto, in covered box, 50,0 to 1 centigramme	1 35
5494. One centigramme, up to 100 grammes, in covered box	\$1 70
— 5495. One gramme, up to 500 grammes, in block	1 80
— 5500a. One gramme, up to 1,000 grammes = 1 kilo. (up to 2 kilo, \$5.00)	3 00
* 5501. Aluminium Grain Weights, $\frac{1}{2}$ to 5 grains, per set	30
* 5502. Square Aluminium Grain Weights, $\frac{1}{2}$ to 10 grains, per set	40
~ 5503. Weights, for gold, from pennyweight and fractions, up to 2 oz. Becker's make.	
Price	\$4 00
* 5504. Balloons of collodion, hydrogen balloons.	
12 16 inches long.	
75 cts. \$1 00.	
5505. Balloons of gold beater's skin	\$3 00
* 5506. Ditto of glass, with short or long neck.	
$\frac{1}{2}$ 1 2 5 10 gals.	
\$1 00 1 50 2 00 2 50 5 00	



- \* 5507. Ditto, of glass, with stop-cock, for weighing gases.....\$1 50  
 \* 5508. Ditto, new style, with 2 very light stop-cocks..... 1 50  
 \* 5509. Ditto, of glass, for determining the specific gravity of vapors.  
     30 CC.      50 CC.      100 CC.      150 CC.  
     .40,      .50,      .60,      75 cts.  
 5510. Balloon of thin rubber, with brass socket and brass stop-cock, capacity  $\frac{1}{2}$  gallon,  
     round or oblong.....\$1 85  
 5511. The Balloon alone..... .50  
 \* 5512. Barometer, Bunsen's Syphon, graduated in millimeters, for boil-  
     ing point, determinations, etc.....\$10 00  
 — 5513. Ditto, with support.....12 00  
 — 5514. Barometer, plain on polished wood paper scale, and thermometer..... 6 00  
 — 5515. Ditto, Milk glass scale.....10 00  
 5516. Ditto, U. S. Signal Service standard in inches or millimeter.....32 00  
 5516a. Ditto, double scale.....35 00  
 — 5517. Ditto, Aneroid, 3 in., \$6.00 4 in., \$7.50 5 in.....10 00  
 ○ 5518. Ditto, ditto, Watch size.....20 00  
 5519. Ditto, ditto, Goldschmidt's standard, for travelling; heights to 4,000 meters, most  
     exact.....\$50 00



5520. Barometer Tubes, for Syphon Barometers, graduated in Millimeters, \$3 00  
 5521. Plain, each..... 1 00  
 5522. Ditto, straight, one end sealed, 33 to 36 inches long, Torricelli's Tube.  
     each..... 35  
 5524. Ditto, with steel stop-cock ... ..2 00  
 \* 5525. Barometer Tube, with Bulb sealed on one end, each..... 40  
 \* 5526. Baskets, of lead, for holding pieces of zinc or sulphide iron, for genera-  
     tors..... 50  
 5527. Baskets, ditto, on three legs..... 75  
     (Baths, drying, sand, water, etc., see there).  
 \* 5528. Battery Jars, round, of glass, best make.  
     Width, 4, 4, 5, 5, 6, 6, 4, 4, 6, 5, 8, 9 inches.  
     Height, 4, 5, 6, 7, 6, 8, 10, 13, 9, 9, 12, 12 $\frac{1}{2}$  inches.  
     Price, 20c. 25c. 30c. 35c. 40c. 40c. 50c. 75c. 75c. 45c. 1.00 1.40 each.  
 \* 5529. Battery Jars, square, of Hard Rubber, 2x3x5 in., each.....65 cts.  
 5530. Battery Jars of glass, square, 1 $\frac{1}{2}$ x5 $\frac{1}{2}$ x6 in., so-called Hellgate cell.....30 cts.  
     2 $\frac{1}{2}$ x5x6 $\frac{1}{2}$  in.....45 cts.  
     3 $\frac{1}{2}$ x4 $\frac{1}{2}$ x6 $\frac{1}{2}$  in.....50 cts.

## GALVANIC BATTERIES.

### —\* 5531. Galvanic Battery, Zinc-carbon.

With extra heavy cast Zincs.

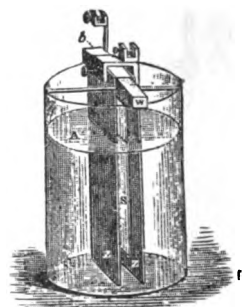
No.	1,	1½,	1¾,	2.
Jar,	4x4,	4½x5,	5x6,	8x8 inches.
Capacity,	pint	quart,	½ gall.	1 gall.
Price,	\$1 00	1 25	2 50	4 00
Carbon,	08	20	35	40
Zinc,	36	45	1 00	2 00
Porous Cup,	10	10	20	25
Jar,	16	20	30	36

### —\* 5532. Battery, ditto, **Bunsen's** style with rolled Zincs.

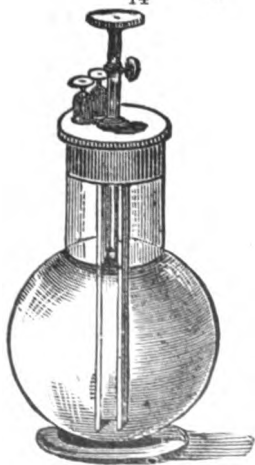
No.	0,	1,	1½,	2,	3.
Jar,	4x4,	4½x5,	5x6,	6x8,	8½x12.
Capacity,	pint,	quart,	½ gall.	1 gall.	2 gall.
Price,	90c.	\$1 10	1 40	2 50	4 75

### \* 5533. Ditto, ditto, **Grenet's Battery**, always charged and ready for use. This battery especially adapted for experimental and illustrative purposes.

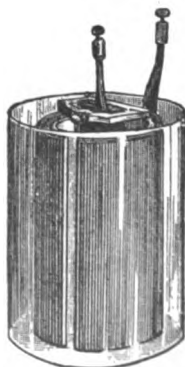
No. 1.—6 inches high,	½ pint	\$1 40
No. 2.—8	1 "	2 40
No. 3.—10	1 quart	3 00
No. 4.—12	½ gallon	4 40
Battery, Grenet's, double Zinc and carbons.		
12 inches high,	½ gallon	8 50
14	1 "	12 00
14	1 "	single zinc.....10 50



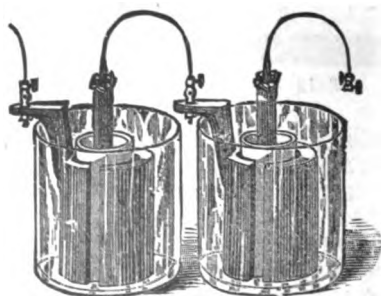
5534



5533



5532



5531

### —\* 5534. Ditto, **Smee's**.

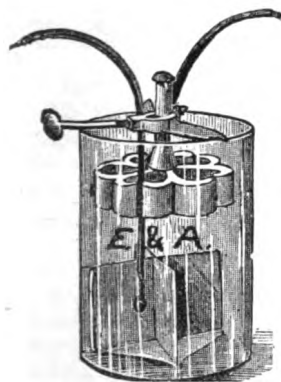
No. 1, carbon plates,	3½x5 inches, per cell	2 50
— 5535. No. 2.	4x8 " "	3 50
— 5536. Smee battery, small,	½ pint	75
○ 5537. Ditto, with <b>Platinized Silver</b> plates, instead of carbons.		

Nos.	1,	2,	3.
Sizes.	3x5,	3½x7½,	4x8 inches.
Price.	\$2.80,	3.10,	3.90

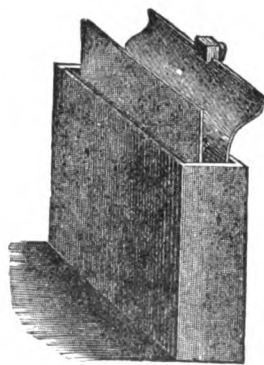
* 5538. Battery, gravity, with improved adjustable Zinc hangers and connections. (This is the most practical for quantitative Copper and Iron precipitations with Platina Cone and Spiral.) Jar 5½x9 in., capacity, 6 pints.....	\$1 00
— 5539. Ditto, Jar, 5x7 .....	75
— 5539a. " " 6x8.....	1 15
Single parts, Copper, 5½x9, 5x7, 6x8.	
Jar, .15, .15, .20.	
Zinc, .40, .25, .35.	
Zinc, .35, .25, .40.	
Zinc hanger, .20, .20, .25.	
— 5540. Ditto, ditto, so-called <b>Crawfoot</b> 5½x9.....	85
— 5541. Ditto, ditto, ditto, Jar, 5x7.....	70
Single parts, Jar, .35, .25.	
" Zinc, .40, .30.	
Copper, .18, .15.	



5542



5528



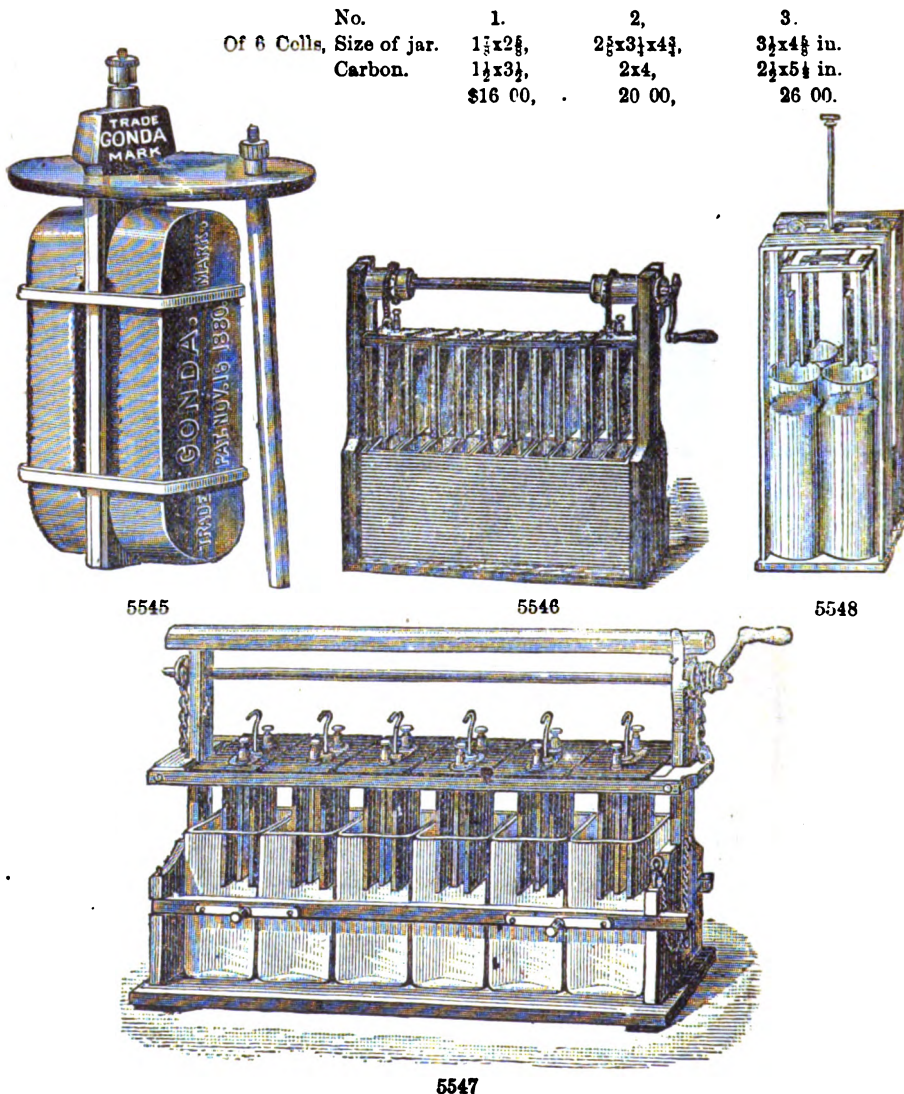
5543



5544

- \* 5542. Battery, Galvanic, expressly arranged for the electric light, with heavy Platinum plates and Amalgamated zincs. This is the form used by Prof. Tyndall in his lectures in America; by President Morton, and other scientific lecturers. 10% off if glass jars are taken. Ten cells in a frame, platinum included, net 2x3x5.....\$35 00  
Battery of 40 cells, in 4 frames.....135 00
- \* 5543. Single cells, complete, \$4.00. Rubber cell 65 cts., Porous cup, 30 cts., Platinum clamp, 30 cts., pole clamp, 35 cts., Glass cell..... .40  
NOTE.—These batteries are much more substantial than those manufactured abroad. The vulcanite cells are in one piece and much tougher, being of better material, and the platinum plates much heavier.
- 5543a. Battery, dry cell, for open circuit, small, 75 cents, large..... 1 50
- \* 5544. Battery, **Laclanché Discque**, the best open circuit battery. Complete, \$0 70  
Porous cup, .50, glass jar, .20, zinc with connector, .10, ammoniac, .10.

- \* 5545. Battery, ditto, **Prism Leclanché**, complete, \$1.00. Prisms, 50c., rubber banda, pair, 10c., carbon, 15c., jar, 20c., cover, 10c., zinc, 10c., sal ammoniac. 10c.
- \* 5546. Ditto, ditto, large Zinc-carbon dipping Battery; with Windlass lift. Six large cells in polished frame zincs and carbons,  $2\frac{3}{4} \times 5 \times 6$  in. .... \$28 00
- \* 5547. Battery, **dipping improved French form**, this battery can be readily changed to either quantity or intensity each cell is independent allowing any number of them to be used at one time.



- \* 5548. Battery, Galvanic ; **Dipping battery according to Bunsen** ; especially adapted for use by lecturers, the connection surfaces are covered with platinum to prevent oxidation.

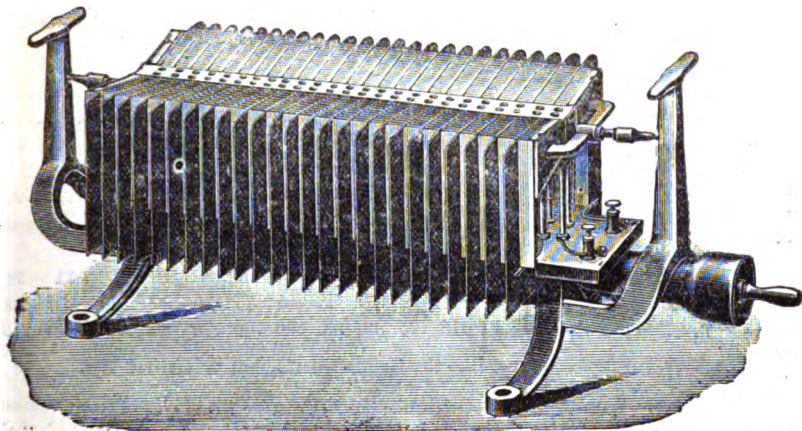
a, of 4 elements, with frame and dipping arrangement .....	\$18 00
b, of 6 elements, " " " " " " .....	24 00
c, of 9 elements, " " " " " " .....	28 00

For every additional element, \$5.00 extra.

The charging mixture used with this battery is a solution of  $3\frac{1}{2}$  parts of Potass. Bichromate and 4 parts of concentr. Sulphuric acid in 18 parts of water.

## 5549. Battery Thermo-electric, Guelcher's Patent.

Small model, with 26 elements.....				\$42 50
Medium " " 50 " .....				80 00
Large " " 66 " .....				95 00
Electromotive power of small,	medium,	large		
1.5	3.0	4.0	volts.	



5549

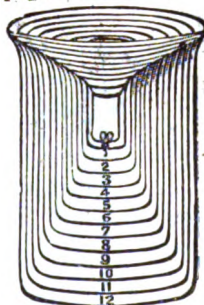
**BEAKERS, or BEAKER GLASSES.—BOHEMIAN.**

From the Factory of Joseph Kavalier, Bohemia.

Beaker of Jena and Resistance glass, see page 378-379.

The Beaker glasses from this well-known manufacturer are produced by wood gas firing, and are so much superior to any other make that it is needless to say more about it here. We simply state that they consist of pure Potassium glass, and of a quality least affected by chemicals and heat.

We beg to call the attention of our customers to the fact that our numbers for Beakers are the original Bohemian. We mention this because some parties have changed the numbers, calling the regular No. 0, No. 1.



5550-5561

Usual form not lipped.	Capacity.	Price per nest.
5550. No. 000..0, 3 in nest,	$\frac{1}{2}$ to $1\frac{1}{2}$ ounces .....	\$ 18
5551. " 1..3, 3 "	$2\frac{1}{2}$ to 7 " .....	35
5552. " 1..4, 4 "	$2\frac{1}{2}$ to 10 " .....	55
5553. " 1..5, 5 "	$2\frac{1}{2}$ to 15 " .....	75
5554. " 0..5, 6 "	$1\frac{1}{2}$ to 15 " .....	80
5555. " 1..6, 6 "	$2\frac{1}{2}$ to 22 " .....	1 00
5556. " 00..6, 8 "	1 to 22 " .....	1 20
5557. " 1..8, 8 "	$2\frac{1}{2}$ to 40 " .....	1 60
5558. " 00..8, 10 "	1 to 40 " .....	1 80
5559. " 00.10, 12 "	1 to 6 pints.....	3 00
* 5560. " 000.12, 15 "	$\frac{1}{2}$ to 1 gallon.....	3 65
5561. Ditto, single.		

No.	000	00	0	1	2	3	4	5	6	7	8	9	10	11	12
Capacity.	$\frac{1}{2}$	1	$1\frac{1}{2}$	$2\frac{1}{2}$	4	7	10	15	22	30	40	60	80	100	130 oz.
Price.	5	7	8	10	12	17	22	25	30	35	40	55	65	75	90 cts.

Ditto with lip, 10% higher in price.

**Beakers, extra tall, Bohemian.**

* 5562. No. 1..6, 6 in nest,	Capacity, 6 to 43 ounces.....	Per nest, \$1 50
5563. " 1..8, 8 "	" 6 to 80 " .....	" 2 40
5564. " 7..8, 2 "	" 60 to 80 " .....	" 1 00

**Beakers, Griffin's, low, wide shape, with lip.**

	Capacity.	Price per nest.
5565. No. 000..0, 3 in nest	$\frac{1}{2}$ to 3 ounces.....	\$ 25
5566. " 1..2, 2 "	5 to 8 " .....	30
5567. " 1..3, 3 "	5 to 12 " .....	50
5568. " 1..4, 4 "	5 to 20 " .....	80
5569. " 1..5, 5 "	5 to 25 " .....	1 10
* 5570. " 1..6, 6 "	5 to 40 " .....	1 50
5571. " 1..8, 8 "	5 to 70 " .....	2 50
5572. " 000.12, 15 "	$\frac{1}{2}$ to 200 " .....	5 25

**\* 5573. Ditto, ditto, single.**

No.	000	00	0	1	2	3	4	5	6	7	8	9	10	11	12
Capacity,	$\frac{1}{2}$	1 $\frac{1}{2}$	2 $\frac{1}{2}$	5	8	12	20	25	40	55	70	80	120	150	200 oz.
Price,	.7	.9	.10	.12	.18	.25	.30	.40	.50	.60	.70	.80	.90	1 00	1 20

**Beakers, low, wide shape, like the Griffin's form, but without lip.**

* 5574. No. 1..2, 2 in nest.	Capacity, 4 to 7 oz.....	Price per nest.	.35
5575. " 1..3, 3 "	" 4 to 10 oz.....	" "	.50
5573. " 1..4, 4 "	" 4 to 12 oz .....	" "	.85

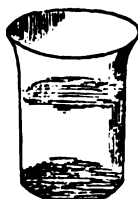
**5577. We also import, to order only, a less expensive beaker of good German glass at 20% less price than our best Bohemian In ordering state Catalogue Numbers.**



5562-5564



5565-5573



5574-5576



5579a



5581

**5578. Beaker glasses, provided with ground labels, for writing upon with a pencil.**  
Each.....10 cts. additional

**5579. Beakers, of finest Royal Berlin porcelain.**

No. 1, capacity, 6 ounces.....	45 cts. each.
No. 2, " 12 " .....	75 "
No. 3, " 16 " .....	95 "
No. 4, " 32 " .....	1 40 "

\* 5579a. Ditto, of thin copper, shape same as the lipped Griffin's Beakers. These Beakers are very handy in the Laboratory. Water will boil very quickly.

Capacity, 125 CC.—60 cts. 250 CC.—75 cts. 500 CC.—90 cts. 1,000 CC.—\$1 00.

**5580. Ditto, nickel plated, for sugar analysis.**

Capacity, 250 CC.—90 cts. 500 CC.—\$1.10. 1,000 CC.—\$1 25.

**Beakers, heavy for sugar salving, small, \$2 00 per doz. Large, \$4 00 per doz.**

\* 5581. **Beehive Shelves, of glass,** .....small 40 cts., large, 50 cts

5582. **Beehive Shelves, of japanned zinc**.....35 cts

5582a. **Ditto, of porcelain**.....Capacity, 20 CC.—30 cts. 110 CC.—70 cts.

**Bellglasses** —All with large rim ground air-tight to glass plates.

## \* 5583. Bellglasses, flat, with knob.

Approximate inside height, 1½,	2½,	3½,	4,	5½,	5, in.
Inside diameter,..... 3,	4,	5,	6,	7,	8, in.
Price.....\$0 45	.60	.75	.85	1 00	1 25
Approximate inside height, 6,	7,	9½,	11	inches.	
Inside diameter..... 9,	10,	12,	16	inches.	
Price.....\$1 40	1 60	2 00	3 50		

## \* 5584. Ditto, tall, with knob.

Inside diameter, 2, 3½ 4½, 6, 6½, 7½, 8½, 9, 10, 9 in.					
Inside height, 6, 7, 8, 12, 14½, 16½, 18½, 15, 12, 21 in.					
Contents, 1 pt. 1 qt. ½ gal. 1 gal. 1½ gal. 2 gal. 3 gal. for microscopes, 5 gal.					
Price, \$0.30 .40 .60 .85 1 10 1.50 3 75 3 30 3 00 5 00					

## \* 5585. Bellglasses, ditto, open top, not stoppered, wide opening, or narrow neck for brass cap. The height and the diameter corresponds with the tall knob.

Contents, 1 pint. 1 quart. ½ gal. 1 gal. 1½ gal. 2 gal. 3 gal. 5 gal.					
.30 .45 .60 .85 \$1 20 1 75 3 00 5 00					

5585a. If fitted with brass cap and brass stop-cock, from \$1 20 to 1 75 extra.

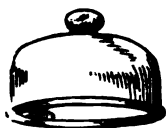
5585b. Ditto, ditto, graduated, from \$1 00 to 3 00 extra.

## \* 5586. Ditto, ditto, with ground in glass stopper.

Contents, 1 quart. ½ gal. 1 gal. 1½ gal. 2 gal.				
.75 \$1 00 1 40 2 00 2 50				

## \* 5587. Ditto, ditto, swelled, with knob.

Contents, 1 pint. 1 quart. ½ gal. 1 gal. 1½ gal. 2 gal. 3 gal.					
.45 .55 .85 \$1 15 1 50 2 25 3 25					



5583



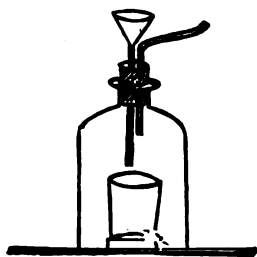
5592



5587



5584



5589



5590



5586



5585

5588. Bellglasses, for Bunsen's pump, ground air-tight to a plate; with plate..\$1 75

\* 5589. Ditto, ditto, with plate, rubber stopper, 2½ inch funnel, suction tube, and platina cone.....\$3 00

\* 5590. Ditto, ditto, belljar, with tubulature near bottom and fitted as above... 4 00

\* 5590a. Belljars, flat, with cover (and knob) for covering specimens and bacterioscopic work. See figure 5332.

5591. Bellglasses, reversed, on large foot, otherwise similar to 5584.

½	1	1½	2 gall.
\$1 25	1 75	2 50	3 00 each.

\* 5592. Ditto, ditto, small, for microscopic analytical work, about 1 oz. capacity, with bell, plate and cup..... 50 cts.

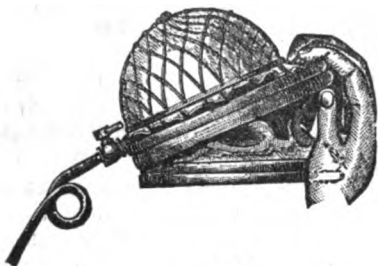
5593. Ditto, ditto, 4 oz capacity..... 60 cts.

\* 5594. Bellows, double blast, to increase gas pressure.....\$5 00

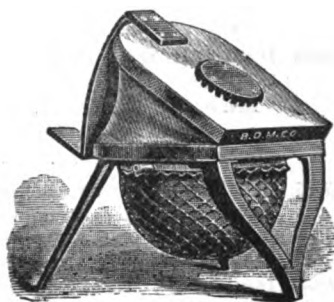


**Bellows, ditto, for powerful steady and equal blast.**

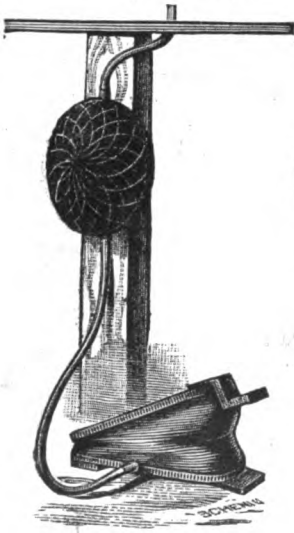
- \* 5595. No. 9, Foot Blower. .... \$4 00  
 ○ 5596. " 9a " medium size. .... 5 00  
 ○ 5597. " 9b " large size. .... 7 00  
 ○ 5601. Extra rubber disks, each. .... .50, .75 and \$1.00  
 ○ 5602. Extra nets, each. .... 35  
 ○ 5603. Bellows separate, No. 9a. .... 3 25  
 Reservoir " No. 9a. .... 3 00



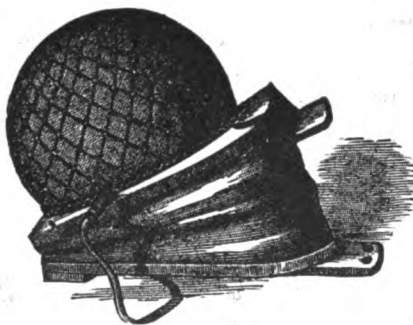
5605



5604



5603



5595



5609



5607

## ○\* 5604. Bellows, new pattern on iron legs.

- No. 9, Foot Blower, new pattern. .... 5 00  
 " 9a " medium size. .... 6 00  
 " 9b " large " .... 8 00

## ○\* 5605. Ditto, ditto, Fletcher's Hand Blower, a very small pattern of the foot blower. When not in use it shuts up flat for the pocket. Price. .... \$3 00

- 5606. In case for travellers, with spare rubber disc. .... 3 25  
 \* 5607. Ditto, black rubber, with netting for use with blow-pipe or other small blasts. 1 50  
 5608. Ditto, large, double Plattner's (see fig. 5651) .... 4 00  
 Ditto, ditto, large, with table, (see Blast Table).

**Berzelius' Lamp, see Lamps.**

## \* 5609. Bells, Electric, triple contact.

2 $\frac{1}{2}$ in.	3 $\frac{1}{2}$ in.	5 in.	6 in.	7 in.	8 in.	9 in.
\$1.65	1.90	2.75	3.60	4.00	4.50	7.50.



\* 5610. **Bells, Electric, boxed.**

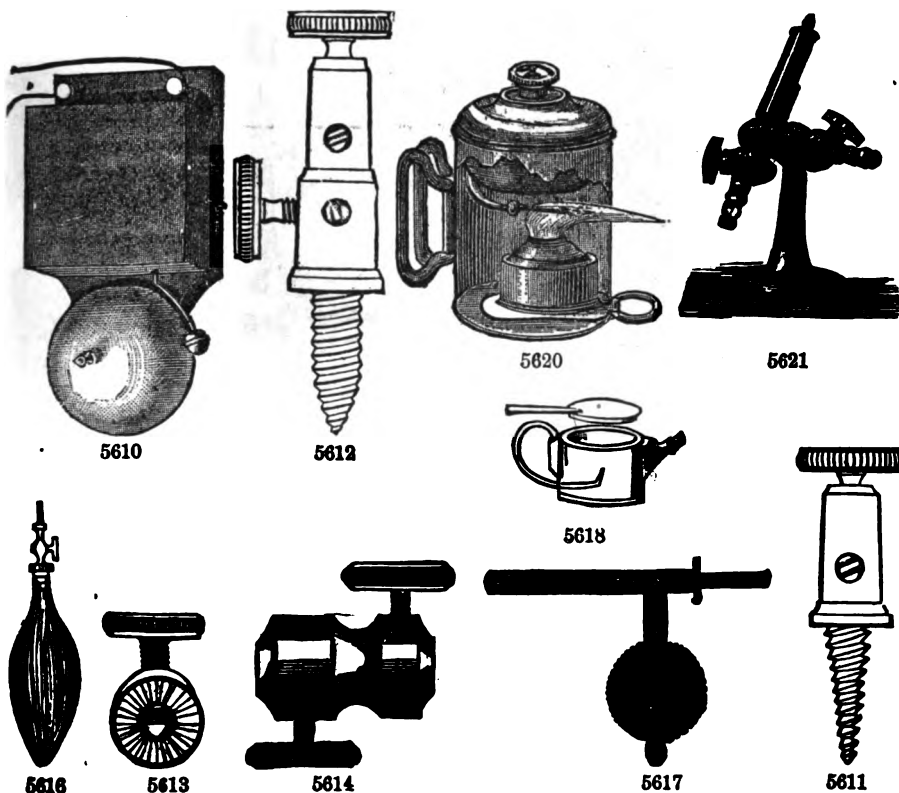
2½,	3½,	4,	5,	6,	8 in.
.75,	1.00,	1.20,	2.50,	4.00,	6.00.

\* 5611. **Binding Posts, with wood screw, single connector**..... 10\* 5612. **Ditto, ditto, double connector**..... 18**Binding Screws, for connecting poles of electric batteries.**\* 5613. a. **Single ones, plain**..... 8 cts. **Finished**..... 10 cts.\* 5614. b. **Doub " " " " " "**..... 12 " " " " " "

All others, for Bunsen's, Daniell's, and Smee's battery on hand, from 25 to 75 cts.

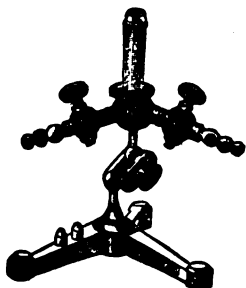
5615. **Bladders, all sizes, assorted; Pig or Beef. Per dozen**..... 75 to \$1 00\* 5616. **Bladder, or Rubber bag, with brass socket and brass stop-cock for gas experiments.**

3 pint.	6 pint.
\$1 50,	1 75.

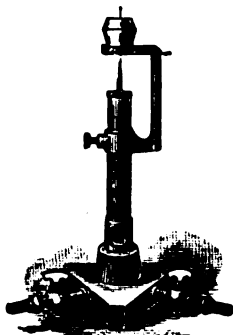
\* 5617. **Blast Attachment, for blow-piping with gas, platina plated blow-pipe tip, etc.**..... \$1 00**BLAST LAMPS.**\* 5618. **Blast Lamp, self-acting, for alcohol, made of heavy copper**..... \$1 505619. **Ditto, extra large, 8 oz. capacity**..... 2 50\* 5620. **Ditto, ditto, for alcohol, aeolipile with horizontal flame**..... 3 00\* 5621. **Ditto, ditto, Bunsen's, for gas and air, most improved form, complete**..... 3 00

5621a. " " " " " " " " double size..... 9 00

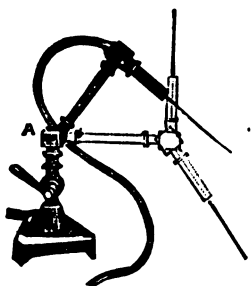
- |         |   |           |
|---------|---|-----------|
| * 5622. | Blast Lamp, Wiesnegg or French form, mounted on ball joint  | \$1 00    |
| * 5623. | Ditto, ditto, as used in the School of mines C. C., designed by Dr. Waller  | 3 00      |
| 5624.   | Ditto, ditto, for working wile and heavy glass tubes, same as used in large glass blowing establishments in Europe and by the Electric light companies here |           |
| a.      | With 4 blasts, 2 double sets.   | 10 00     |
| b.      | With 6 blast, 2 triple sets   | 15 00     |
|         | Platina tips for same.  | 1 00 each |
|         | For other forms, see Appendix.  |           |
| ○ 5625. | Ditto, ditto, ditto, with upright blast. Fletcher's, see fig. 5626  | \$3 50    |
| ○*      | 5626. Ditto, with blow-pipe furnace.  |           |
|         | Blow-pipe Furnace, with bottom or side hole, and one crucible.  | 25 cts.   |
|         | Blow-pipe Furnace, with Bunsen's blast taps for gas and air, and furnace support, without blower, as per cut  | \$1 25    |
|         | Clay crucibles, per doz   | 25        |
|         | Clay capsules, per doz.   | 25        |
|         | Furnace support.  | 60        |
|         | " " Lewis', with cap.   | 1 00      |
|         | For Blowers, see Nos. 5630—5604.  |           |



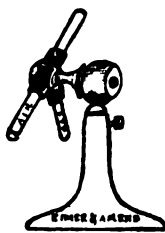
5622



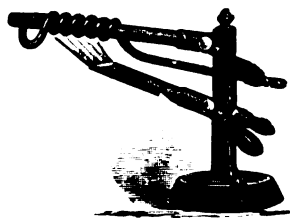
5626



5627



5623



5628

- \* 5627. **Blast Lamp or Herapath, Fletcher's, for general use.**  
     No. 4, Improved Herapath Blow-pipe.....\$3 75  
     No. 4b, Improved Herapath Blow-pipe, without the joint A..... 3 00  
  
     With Fletcher's new Mouth-piece, extra..... 60  
     Blast Lamp, Fletcher's, for hot blast, for temperatures above the power of ordinary gas and air blow-pipes, as illustrated by the engraving, the air pipe is coiled round the gas pipe, down to a small point of flame, it will fuse a moderately thick platinum wire.  
 ○\* 5628. No. 1a. Hot Blast Blow-pipe..... \$5 00  
 ○ 5629. No. 2a. Same construction as No. 1a, but with upright jet..... 6 00

- \* 5630. No. 3a, constructed on the same principle as No. 1a, but with bench light arranged to swivel so as to carry a light to the blow-pipe jet.....\$7 00

**Blast Furnace,** (see Furnaces).

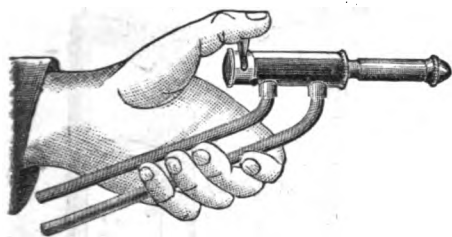
**Blast Blow-pipes,** (see Blow-pipes and Blast Lamps).

- \* 5631. **Blast Lamp or Automaton Hand Blow-pipe.**

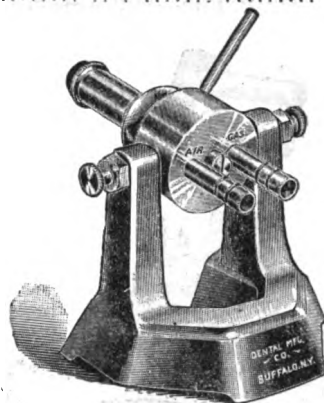
The No. 6b requires a  $\frac{3}{4}$  bore gas-pipe and tap. The No. 6c requires for its fullest power a  $\frac{1}{2}$  inch clear bore gas-pipe and tap, and is adapted for the heaviest brass finishers' work. The Nos. 6a and 6b require Blower No. 9. No. 6c requires Blower No. 9b. For Blowers, see Bellows.

No. 6b. Aut. Hand Blow-pipe .....\$3 50

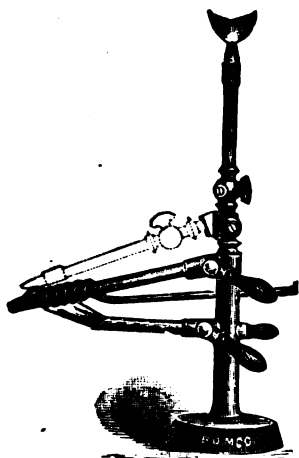
No. 6c. Aut. Hand Blow-pipe ..... 5 00



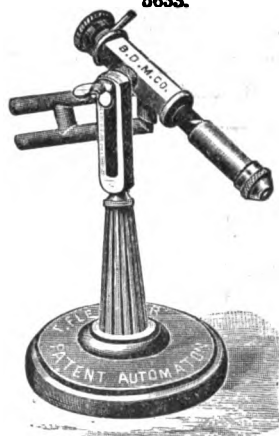
5631



5633.



5630



5632

5632. **Blast Lamp or Automaton Hand, Blow-pipe on Stand.** The Stand shown in the engraving is adapted to either the No. 6b or 6c. The operator is thus enabled to use the blow-pipe on the table. The swivel gives great latitude of adjustment, the blow-pipe is easily detached and capable of use in the hand.

No. 6d. Aut. on Standard see fig. 5631.....\$4 00

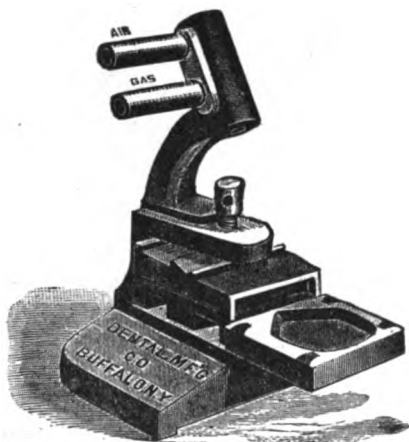
No. 6c. Aut. 6c on Standard ..... 5 50

- \* 5633. **Blast Lamp, Fletcher's, or Compound Blow-pipe.** For glass-workers and experimental laboratories.

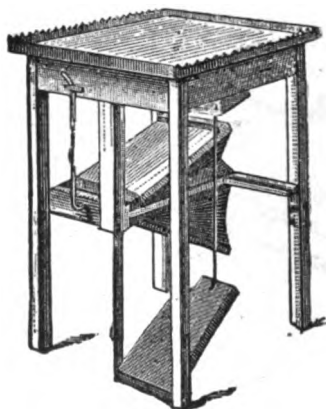
This is a double concentric blow-pipe. The gas and air are changed automatically from the larger to the smaller blow-pipes by a slight movement of the lever at the back, the same movement also adjusting both gas and air to each other for each blow-pipe. The combination of two blow-pipes in this manner gives a great range of power, from a delicate pointed jet, to a brush flame using 35 feet per hour.

No. 20. Compound Blow-pipe.....\$10 00

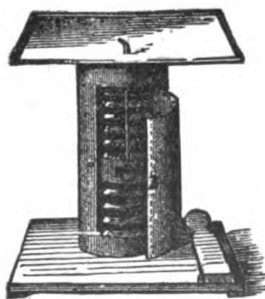
- \* 5634. **Blast Lamp or New Melting arrangement.** For melting up to 3 ounces of gold or silver rapidly, without the use of a furnace. For coal gas only. When the metal is melted in the shallow crucible of compressed charcoal, tilt the whole apparatus over so as to fill the ingot mould. The No. 9 Blower should be used with the 8d Melting Arrangement.
- No. 8d. Melting Arrangement.....\$3 00  
Ingot mould, if ordered separately.....1 25
- \* 5635. **Blast Table, of best and solid make, with all the latest improvements, French pattern**.....\$35 00
- \* 5636. **Ditto, ditto, German glass blowers' style**.....25 00  
**Blow-pipe Apparatus, according to Prof. Plattner (see Appendix.)**



5634



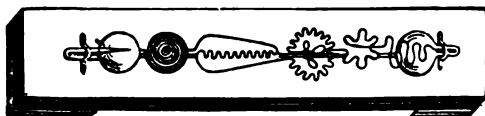
5635



5636



5641



5637



5639

- \* 5637. **Blood Circulating Apparatus, a hydrostatic toy ; small**..... \$4 00  
5638. Ditto, ditto, large ..... 10 00
- 5638a. **Blower, Roots improved, for smelting and glass blowing.**  
Price..... small, 45 00, large, 80 00  
Blower, Professor Richards, water blast, (see Apparatus, page 32, No. 5273.)
- \* 5639. **Blow-pipe, Black's conical form, of japanned tin, with movable tip of brass**.....25 cts.
5640. Ditto, ditto, without tip....15 cts.....The tip alone....10 cts.
5641. **Blow-pipes, of brass, jewelers, form plain.**
- | Length, | 8   | 9   | 10   | 11   | 12 in.         |
|---------|-----|-----|------|------|----------------|
|         | .10 | .10 | .12  | .14  | .16 cts. each. |
|         | .75 | .85 | 1.00 | 1.20 | 1.40 doz.      |
5642. Same as 5641, with mouth-piece, 25 cts. higher.

## \* 5643. Blow-pipes, ditto, with air chamber.

Length,	8	10	12 in.
	.15	.20	.25 cts. each.

5644. Same as 5643, with mouth-pieces, 25 cts. extra.

\* 5645. Ditto, ditto, according to Professor Plattner and Berzelius; brass, of best German make; soldered platinum plate trumpet mouth-piece; can be taken apart in four pieces..... \$1 40

5646. Ditto, ditto, with movable platina tip, Lingke's pattern..... 2 50

\* 5647. Ditto, ditto, nickel plated, rubber mouth-piece..... 2 50

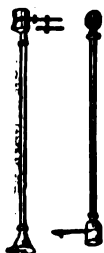
5648. Blow-pipe, ditto, with blast attachment for gas..... 3 25

(All Plattner's Blow-pipes fitted with trumpet, flat or round mouth-piece, according to order.)

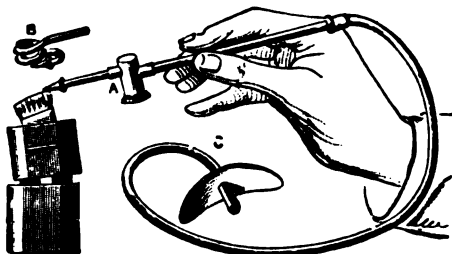
○ \* 5649. Ditto, ditto, Fletcher's patent.

Two jets; cold blast and hot blast; nickel plated; mouth-piece in case... \$1 50

Mouth-piece alone, for use with other blow-pipes..... 60 cts.



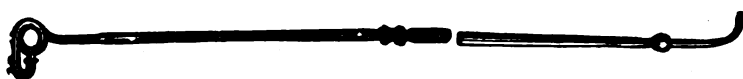
5615



5649

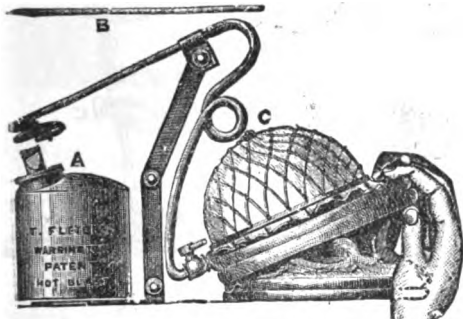


5651



5650

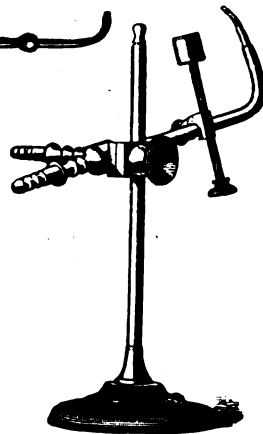
5643



5654



5647



5657

○ \* 5650. Blow-pipe, Fletcher's, with hot blast..... 75 cts.

\* 5651. Blow-pipe, Plattner's, with double bellows on universal support..... \$9 00

5652. Ditto, new form, for blow-piping as well as for larger flames, for glass blowing, etc., with 3 jets..... \$6 50

Bellows for same..... 4 00

Complete with rubber tubing..... 11 00

○ 5652a. Blow-pipe, Fletcher's, with folding stand and two jets. It can be used either with the mouth, or the small hand blower can be attached, and the blowing done by pressure. Complete as illustrated..... 4 75

○ 5653. The Stand, with blow-pipe..... \$1 50

○ \* 5654. The Stand, Blow-pipe and Hand bellows in case..... 4 00

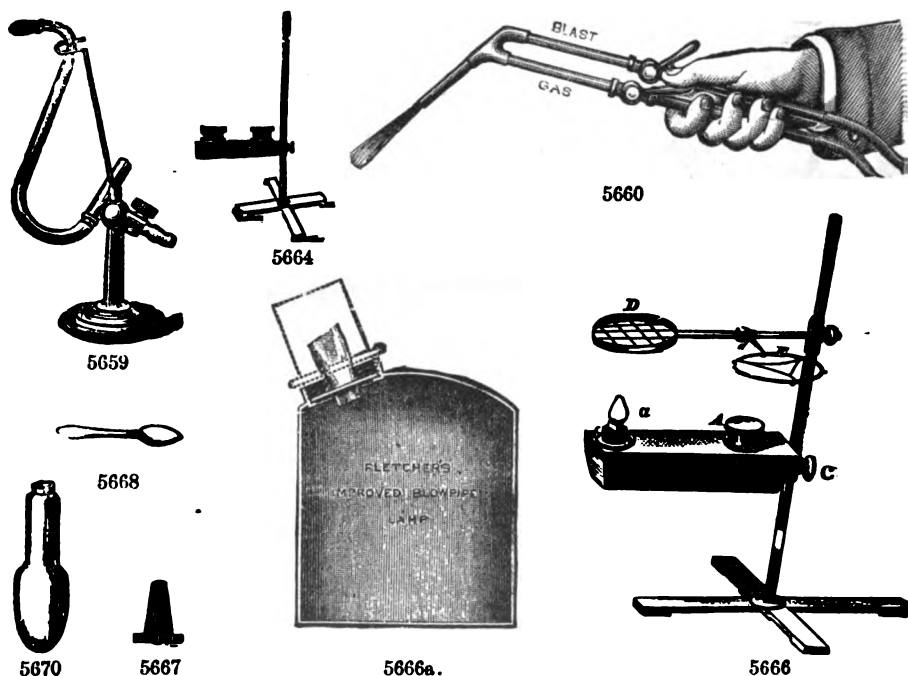
○ 5655. The Lamp for same..... 75 cts.

○ 5656. Ditto, ditto, for solid fats, cheaper construction..... 35 cts.

\* 5657. Blow-pipe, oxyhydric; on stand; all brass, with movable holder for the lime cylinder..... \$5 50

5658. Ditto, with two stop-cocks..... 7 50

- \* 5659. **Blow-pipe, Bunsen's**, for gas, on iron support.....\$3 00  
 ○\* 5660. **Blow-pipe, for Brazing**, with two lever stop-cocks, as in engraving..... 2 50  
 ○ 5661. **Brazing Blow-pipe**, without stop-cocks..... 1 75  
**Other Blow-pipes (see Blast Lamps.)**  
 ○ 5662. **Blow-pipe Cabinet**, expressly arranged for travelling and prospecting, according to Professor Plattner, made by Lingke in Freiberg. This is the most complete and most perfect outfit for quantitative and qualitative blow-piping. It includes the well-known Lingke's portable Balance with folding glass case. All apparatus fitted in polished trays and boxes, which are contained in a leather-covered chest, 12x12x14 inches square.....\$175 00  
 5663. Ditto, for qualitative work, in polished wooden case.....\$38 00  
**Blow-pipe Balance, Plattner's.** (See Balance, Plattner's.)  
 \* 5664. **Blow-pipe Lamp, Plattner's polished brass**, or black japanned, without swivel.....\$3 50  
 5665. Ditto, ditto, **nickel plated**, with patent swivel..... 4 25  
 5665a. **Blowpipe as used by Lead Burners**, per set..... 7 50



- \* 5666. **Blow-pipe Lamp, Plattner's, Freiberg make**; watch-glass and dish holder, arm with wire triangles, chimney and holder, etc; the whole of German silver Price.....\$10 00  
 ○\* 5666a. Ditto, ditto, **Fletcher's**.....zinc, 35, brass, 75 cts.  
 See also figure 5654.

#### Other Blow-Pipe Apparatus (See Appendix).

- \* 5667. **Blow-pipe Tip** for Plattner's Blow-pipe, stamped, of pure platinum, very heavy, without seam, each..... 90 cts  
 \* 5668. **Blow-pipe Spoons**, ivory, each..... 24 cts  
 5669. **Boiling Sheet**, of Russian Iron on four legs.....\$1 25  
**Boilers, (See Steam Boiler).**  
 \* 5670. **Bologna Flasks**, of heavy glass, will break when a hard angular body is dropped into them.  
 Each 10 cts. Per dozen.....\$1 00

**5671. Bolt Heads, of hardest, best annealed Bohemian glass.**

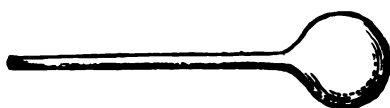
Capacity,	4	8	16	24	32	64 oz.
	.50	.60	.75	\$1 00	1 20	1 50

**\* 5672. Ditto, ditto, of hard, fusible Bohemian glass, with extra long necks.**

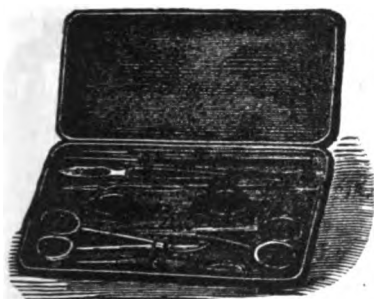
Length of tube, about	20	24	28	36 in.
Capacity of bulb,	4	8	16	32 oz.
Price, each,	\$1 05	1 25	1 45	1 75

**5673. Botanical Case, in morocco leather ; containing one pair of forceps, one pair scissors, dissecting knife, needle holder ; with needles, and lense.**

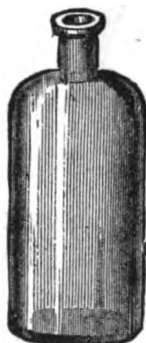
Price.....\$5 00

**\* 5673a. Ditto, ditto, larger set, two lenses, etc .....** 7 00

5672



5673a.



5674



5675



5676



5677

**BOTTLES.****Bottles, acid or cobalt, (see Acid Bottles.)****○\* 5674. Ditto, ditto, green, round shoulder, narrow mouth.**

	$\frac{1}{2}$	1	2	3	4	6	8	16 oz.	1 qt.	$\frac{1}{2}$ gal.	1 gal.	2 gal.
Doz.	.15	.18	.20	.25	.28	.32	.40	.50	\$1 20	1 75	2 50	8 00

**\* 5675. Ditto, ditto, square, flint glass, narrow mouth.**

	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	3	4	6	8	12	16	32 oz.
	.20	.20	.20	.25	.30	.35	.40	.50	.55	.75	.90	\$1 50 doz.

**\* 5676. Ditto, ditto, wide mouth, flint glass. Square or round.**

	$\frac{1}{2}$	1	2	3	4	6	8	12	16	32 oz.
	.20	.25	.30	.35	.40	.50	.70	.90	\$1 20	1 80 doz.

**Ditto, ditto, green glass.**

	$\frac{1}{2}$	1	2 gal.
	.25	.40	.75 each.

**\* 5677. Ditto, ditto, extra wide mouth.**

	$\frac{1}{2}$	1	2	3	4	8 oz.
	.20	.30	.40	.50	.60	.90 cts.

- \* 5678. Bottles, glass stoppered, of German glass, with well ground stoppers, narrow mouth, so-called Tinctures.

$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	6	8	12	16	32 oz.	$\frac{1}{4}$	1	2 gal.	3 gal.
.60	.65	.70	.80	\$1 00	1 25	1 40	1 60	2 00	2 50	3 90 doz.	.45	.90	\$1 50 3 00 each.

- \* 5679. Ditto, ditto, of Bohemian glass, with flat cut polished stopper.

$\frac{1}{4}$	1	2	4	6	8	12	16	32 oz.
\$1 00	1 25	1 40	2 00	2 25	2 50	3 00	3 75	5 00 doz.

- 5680. Ditto, Tinctures, Blue or Black glass.

$\frac{1}{4}$	1	2	4	8	16	32 oz.
\$1 25	1 60	1 75	2 40	3 50	4 50	5 50 doz.

- \* 5681. Ditto, ditto, German salt mouth, high stopper.

$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	6	8	12	16	32 oz.
.95	\$1 00	1 10	1 20	1 40	1 75	2 00	2 25	3 00	3 25 4 25 doz.

- \* 5682. Bottles, salt mouth, German, with flat glass stopper; a handsome, solid bottle.

$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	6	8	12	16	32 oz.
\$1 30	1 40	1 50	1 60	1 80	2 20	2 65	3 00	3 50	4 00 5 00 doz.



5678



5681



5679



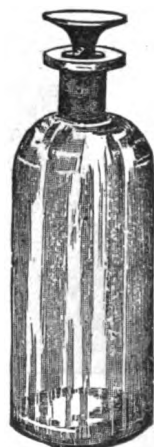
5682



5683



5687



5688

- \* 5683. Ditto, ditto, of Bohemian glass, with flat cut polished stopper.

$\frac{1}{4}$	1	2	4	6	8	12	16	32 oz.	$\frac{1}{4}$	1	2 gal.
\$1 40	1 60	1 80	2 25	2 65	3 00	3 75	4 00	5 00	9 00	12 00	24 00

5684. Ditto, ditto, E. A. style, extra wide mouth to allow a good size spoon to pass; 3 oz. capacity; a very practical bottle for the Laboratories and for Microscopists.

Size, 2 in. diameter, 3 in. high, per dozen.....\$2 00

- 5685. Ditto, ditto, salt mouth, Bohemian, of blue glass.

Capacity,	1	2	4	8 oz.
Doz.	\$2 00	2 25	3 00	3 75

5686. Ditto, ditto, wide mouth, with wood top.

Capacity,	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	6	8 oz.
Doz.	.60	.65	.75	.85	\$1 00	1 25	1 60

- \* 5687. Ditto, ditto, glass stoppered, square for travelling cases, etc.

$\frac{1}{4}$	1	2	3	4	8 oz.	
Size, $1\frac{1}{8} \times 1\frac{1}{8} \times 3\frac{1}{4}$ in.	$1\frac{1}{8} \times 1\frac{1}{8} \times 4$ in.	$1\frac{1}{8} \times 2 \times 4\frac{1}{2}$ in.	$1\frac{1}{8} \times 3 \times 4\frac{1}{2}$ in.	$1\frac{1}{8} \times 4 \times 4\frac{1}{2}$ in.	stoppers included.	
Doz.	\$1 00	1 10	1 20	1 40	1 60	2 00

- \* 5688. Ditto, ditto, tinctures, mushroom stoppered; best French flint glass; elegant shape.

Contents,	1	2	4	6	8	16	32 oz.	$\frac{1}{4}$	1	2	3 gal.
Dozen,	\$1 00	1 10	1 20	1 50	1 75	1 85	2 25	3 60	5 40	11 70	24 00



Bottles, ditto, if extra heavy double thick, finest ware made, 30% additional.

— \* 5690. **Bottles, mushroom stoppered, salt mouth, same as above.**

Contents,	1	2	4	8	16	32 oz.	$\frac{1}{2}$	1	2 gal.
Dozen,	1 00	1 20	1 50	2 00	2 25	3 00	4 50	7 20	18 00

5691. If extra heavy double thick, 30% additional.

This is the best quality made.

\* 5692. Ditto, ditto, glass stoppered, with good pouring lip and large ground glass cap, best German ;

Contents,	4	8	16	32 oz.
Each,	.35	.55	.65	.75
Dozen,	\$4 00	6 50	7 00	8 25

(\*) 5693. Ditto, salt mouth, of acid proof stone ware, for shelves, glazed inside and outside, with air-tight ground covers, for keeping heavy chemicals.

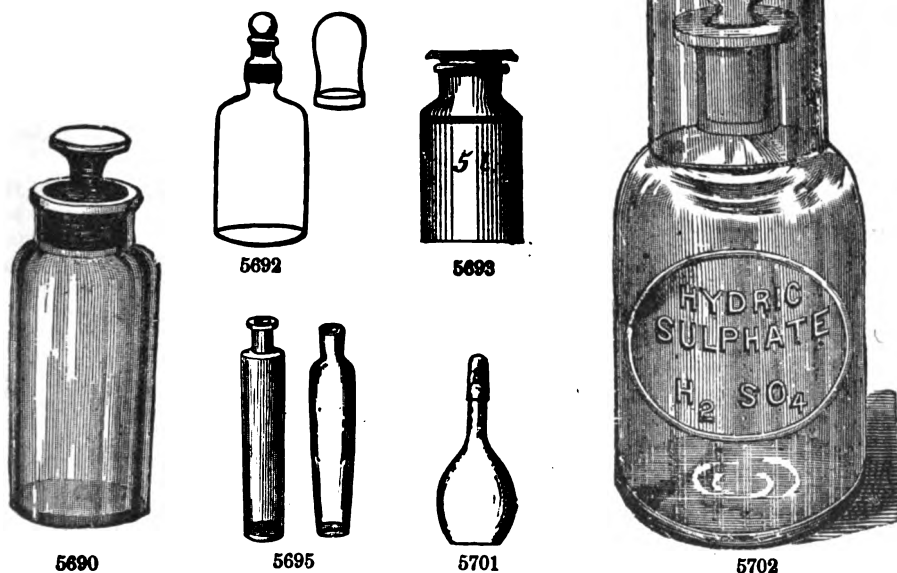
Capacity,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 gallons.
Price,	\$1 10	1 25	1 40	1 55	1 70	1 85	2 20 each.
Capacity,	2 $\frac{1}{2}$	3	4	5	6	6	gallons.
Price,	\$2 65	3 00	3 75	5 00	6 00	6 00	each.

5694. Bottles, extra wide mouth, Bohemian glass, for Leyden Jars.

$\frac{1}{2}$ Pint,	Pint,	Quart,	$\frac{1}{2}$ gal.	1 gal.
.15	.20	.25	.35	.50c. each.

\* 5695. Ditto, sample, for oils and other liquids.

1,	2,	4,	8 oz.
.40	.55	.80	1 20 dozen.



All bottles will be furnished with handsome glass labels for exhibition or collections at from 15 to 25 cents additional charges.

— 5700. Bottles, of lead, for Hydrofluoric acid.

$\frac{1}{2}$	$\frac{1}{2}$	1	2 lb.	$\frac{1}{2}$	1	2	3	5 gal.
.75	\$1 00	1 50	2 00	2 50	3 25	5 25	6 00	7 75

\* 5701. Bottles, for keeping Oxide of Copper prepared for analysis.

Capacity,	8	16	32 oz.
Price,	.45	.60	.80

○ \* 5702. Bottles for Re-agents; the cheapest made. These bottles have the chemical names and equivalents distinctly blown in the glass. All letters are ground to make them perfectly visible. Capacity,  $4\frac{1}{2}$  oz. Height  $5\frac{1}{2}$  in. Price per dozen, assorted from list, net.....\$1 75

See also page 339.

- \* 5703. **Bottles for Re-agents**, if provided with cap. .... 60 cts. extra, per dozen.  
 ○ 5704. Ditto, ditto, the full set of 40 bottles, No. 1-40, complete, net. .... \$5 83  
 ○ 5705. Ditto, ditto, packed in shipping order ..... 6 00

The above set of 40 bottles, No. 1-40 filled with chemically pure re-agents, according to Fresenius; the bottles included, net. .... \$12 00  
 Sealed and packed in shipping order ..... 14 00

- |                                |                                |
|--------------------------------|--------------------------------|
| 1. Hydric Sulphide, (Amber.)   | 20. Baric Chloride.            |
| 2. Hydric Chloride.            | 21. Calcic Chloride.           |
| 3. Hydric Acetate              | 22. Calcic Sulphate.           |
| 4. Hydric Sulphate.            | 23. Calcic Hydrate.            |
| 5. Hydric Nitrate.             | 24. Magnesian Sulphate.        |
| 6. Potassic Ferrocyanide.      | 25. Mercuric Chloride.         |
| 7. Potassic Sulphocyanide.     | 26. Argentie Nitrate, (Amber.) |
| 8. Potassic Carbonate.         | 27. Plumbic Acetate.           |
| 9. Potassic Sulphate.          | 28. Ferrous Sulphate.          |
| 10. Potassic Iodide.           | 29. Ferric Chloride.           |
| 11. Potassic Ferricyanide.     | 30. Alcohol.                   |
| 12. Potassic Hydrate.          | 31. Ammonic Sulphocyanide.     |
| 13. Potassic Acid Chromate.    | 32. Baric Hydrate.             |
| 14. Di Sodie Hydric Phosphate. | 33. Baric Carbonate.           |
| 15. Ammonic Hydrate.           | 34. S. dic Hydrate.            |
| 16. Ammonic Sulphide (Amber.)  | 35. Ether.                     |
| 17. Ammonic Chloride.          | 36. Cupric Sulphate.           |
| 18. Ammonic Carbonate.         | 37. Sodie Carbonate.           |
| 19. Ammonic Oxalate.           | 38, 39, 40, Blank.             |

As the above mentioned set of 40 bottles was not selected with the requirements of qualitative and quantitative analysis as at present in use, we have rearranged and made a set to meet the present requirements increasing the thickness of the bottles, as those usually sold are found to be too light in glass, the set comprises,  $\frac{1}{2}$  pint tinctures,  $\frac{1}{2}$  pint tinctures, 4 oz. salt mouths.

- 5706. 1 set of 40 extra stout re-agent bottles, glass labeled. .... \$7 17  
 ○ 5707. Ditto, packed in shipping order ..... \$7 40  
 ○ 5708. 1 set, ditto, filled completely ..... \$16 00  
 ○ 5708a. Set ditto, filled, sealed and packed in shipping order ..... \$18 00

8 oz. Bottles.

102. Acid Sulphuric (dil.)  $H_2SO_4$   
 105. Acid Hydrochloric  $HCl$ .  
 103. Acid Nitric  $HNO_3$   
 108. Ammonic Hydrate  $(NH_4)_2O$   
 116. Blank 1

4 oz. Bottles.

4. Acid Sulphuric conc.  $H_2SO_4$   
 17. Ammonic chloride  $(NH_4)_2Cl$   
 19. Ammonic oxalate  $(NH_4)_2C_2O_4$   
 31. Ammonic sulph. cyanide  $(NH_4)_4CNS$   
 82. Ammonic molybdate  $(NH_4)_2MoO_4$   
 18. Ammonic carbonate  $(NH_4)_2CO_3$   
 3. Acid acetic  $HC_2H_3O_2$   
 30. Alcohol  $(C_2H_5)_2OH$   
 26. Argentie nitrate  $AgNO_3$  (amber).  
 20. Baric chloride  $BaCl_2$   
 23. Calcic hydrate  $CaH_2O_2$   
 36. Cupric sulphate  $CuSO_4$   
 29. Ferric chloride  $Fe_2Cl_6$   
 1. Hydric sulphide  $H_2S$  (amber).  
 16. Ammonic sulphide  $(NH_4)_2S$  (amber).

24. Magnesian sulphate  $MgSO_4$   
 25. Mercuric chloride  $HgCl_2$   
 86. Mercurous nitrate  $Hg_2(NO_3)_2$   
 327. Platinic chloride  $PtCl_4$ , 1 oz.  
 27. Plumbic acetate  $Pb(C_2H_3O_2)_2$   
 13. Potassic acid chromate  $K_2Cr_2O_7$   
 6. Potassic ferrocyanide  $K_4Cfy$   
 10. Potassic iodide  $KI$   
 59. Sodie carbonate  $Na_2CO_3$   
 60. Sodie acetate  $NaC_2H_3O_2$   
 14. Sodie phosphate  $Na_2HPO_4$   
 56. Uranic acetate  $(UO)_2C_2H_3O_2$   
 35. Ether  $(C_2H_5)_2O$   
 40. 1 blank

4 oz. Salt mouth Bottles.

301. 4 oz. Sodie carbonate  $Na_2CO_3$   
 304. 5 oz. Borax  $Na_2B_4O_7 \cdot 10H_2O$   
 305. 4 oz. Ferrous sulphate  $FeSO_4$   
 303. 4 oz. Potassic cyanide  $KCy$   
 307.  $3\frac{3}{4}$  oz. Phosphorous Salt  
 $Na(NH_4)HPO_4 + 4H_2O$   
 312. Test paper.

Other 4 oz. labeled Reagent bottles in stock.

- 5709a Same set, of German make, with black enameled labels. .... \$25 00 filled, \$35 00

58. No Symbols.....Fehling's Solution.  
 59.  $\text{Na}_2\text{CO}_3$ .....Sodic Carbonate.  
 60.  $\text{Na C}_2\text{H}_3\text{O}_2$ .....Sodic Acetate.  
 61.  $\text{Na O H}$ .....Sodic Hydrate.  
 77.  $\text{N H}_3$ .....Ammonia.  
 81.  $\text{Sn Cl}_2$ .....Stannous Chloride.  
 82.  $(\text{N H}_4)_2\text{Mo O}_4$ .....Ammonic Molybdate.  
 83.  $\text{C S}_2$ .....Carbon Di Sulphide.  
 86.  $\text{Hg}_2(\text{N O}_2)_2$ .....Mercurous Nitrate.  
 87. No Symbols.....Indigo Solution.  
 88. No Symbols.....Nessler's Solution.  
 90. No Symbols.....Magnesia Mixture.  
 93.  $\text{C}_2\text{H}_2\text{O}_4$ .....Acid Oxalic.  
 94.  $\text{C}_6\text{H}_3\text{O}(\text{NO}_2)_2$ .....Acid Picric.  
 96.  $\text{K}_2\text{Cr O}_4$ .....Neutral Potassic Chromate.  
 97.  $\text{NH}_4\text{HS}$ .....Ammonic Sulphydrate.  
 100. Mercuric potassium iodide.  
 401. Barium nitrate  $\text{Ba}(\text{NO}_3)_2$   
 404. Silver sulphate  $\text{Ag}_2\text{SO}_4$   
 406. Bromine water.  
 407. Chloroform  $\text{CH Cl}_3$   
 408. Cochineal.  
 409. Coralline.  
 410. Litmus.  
 411. Methyl orange.  
 412. Phenolphthalein.  
 413. Turmeric.  
 414. Iodine solution  $\text{I} + \text{KI}$   
 415. Methyl Alcohol  $\text{CH}_3\text{OH}$   
 416. Sodium cobaltic nitrite.  
 417. Sodium hypsulphite  $\text{Na}_2\text{S}_2\text{O}_3$

○ Net price per dozen, \$1.75.

○ Per gross, \$18 50 Net.

## ○ 5709. Half-Pint Reagent Bottles, 1-4 Liter, or 8 oz. Height, 6½ inches.

101.  $\text{H}_2\text{SO}_4$ .....Sulphuric Acid (Concent.)  
 102.  $\text{H}_2\text{SO}_4 + \text{Aq}$ .....Sulphuric Acid, (Dilute.)  
 103.  $\text{H N O}_3 + \text{Aq}$ .....Nitric Acid, (Concent.)  
 104.  $\text{H N O}_3 + \text{Aq}$ .....Nitric Acid, (Dilute.)  
 105.  $\text{H Cl} + \text{Aq}$ .....Hydrochloric Acid, (Conc't.)  
 106.  $\text{H Cl} + \text{Aq}$ .....Hydrochloric Acid, (Dilute.)  
 107.  $\text{H}_2\text{S}$ .....Hydric Sulphide.  
 108.  $\text{H}_4\text{N H O}$ .....Ammonic Hydrate.  
 109.  $\text{H}_4\text{N Cl} + \text{Aq}$ .....Ammonic Chloride.  
 110.  $(\text{H}_4\text{N})_2\text{CO}_3 + \text{Aq}$ .....Ammonic Carbonate.  
 111.  $\text{Na O H} + \text{Aq}$ .....Sodic Hydrate.  
 112.  $\text{Na}_2\text{CO}_3$ .....Sodic Carbonate.  
 114.  $\text{Ba Cl}_2 + \text{Aq}$ .....Baric Chloride.  
 116. Blank.  
 122.  $(\text{N H}_4)_2\text{S}$ .....Ammonic Sulphide, (Amber.)  
 129.  $\text{Na}_2\text{H P O}_4$ .....Sodic Phosphate.  
 130.  $(\text{N H}_4)_2\text{C}_2\text{O}_4$ .....Ammonic Oxalate.  
 131.  $\text{H C}_2\text{H}_3\text{O}_2$ .....Acetic Acid.  
 145.  $\text{Ag NO}_3$ .....Argentive Nitrate, (amber.)  
 150.  $\text{K H O}$ .....Potassic Hydrate.

○ Net price per dozen, \$2.25.

○ Per gross, \$23.00 Net.

## ○ 5710. Pint Reagent Bottles, 1-2 Liter, or 1 lb. Height, 7½ inches.

204.  $\text{H}_4\text{N H O}$ .....Ammonic Hydrate.  
 211. Blank.  
 215.  $\text{H}_2\text{SO}_4 + \text{Aq}$ .....Sulphuric Acid.  
 216.  $\text{H N O}_3 + \text{Aq}$ .....Nitric Acid.  
 217.  $\text{H Cl} + \text{Aq}$ .....Hydrochloric Acid.

○ Net price per dozen, \$3.25.

○ Per gross, \$33.00 Net.

## ○ 5711. Quart Reagents.

501.  $\text{H}_2\text{SO}_4$ .....Sulphuric Acid, Concent.  
 502.  $\text{H}_2\text{SO}_4 + \text{Aq}$ .....Sulphuric Acid, Dilute.  
 503.  $\text{H NO}_3$ .....Nitric Acid, Concent.  
 504.  $\text{H NO}_3 + \text{Aq}$ .....Nitric Acid, Dilute.  
 505.  $\text{H Cl}$ .....Hydrochloric Acid, Concent.  
 506.  $\text{H Cl} + \text{Aq}$ .....Hydrochloric Acid, Dilute.  
 511. Blank.

○ Net price per dozen, \$4.00.

○ 5712. **1 Oz. Reagents, Tinctures.** Height, 3½ inches.

325. Ag N O<sub>3</sub> ..... Silver nitrate (Amber).

326. Co (N O<sub>3</sub>)<sub>2</sub> ..... Cobaltous nitrate.

327. Pt Cl<sub>4</sub> ..... Platinic chloride.

336. Au Cl<sub>3</sub> ..... Gold chloride.

341. Blank.

○ Net price per dozen, \$1 25.      ○ Per gross, \$12.00 Net.

○ 5713. **1 Oz. Salt Mouth Reagents.** Height, 3½ inches.  
Symbols only.

350. Na<sub>2</sub> C O<sub>3</sub> ..... Sodium carbonate.

351. Na<sub>2</sub> B<sub>4</sub> O<sub>7</sub> ..... Borax.

353. Na C<sub>2</sub> H<sub>3</sub> O<sub>2</sub> ..... Sodium acetate.

354. K N O<sub>3</sub> ..... Potassium nitrate.

361. Na (N H<sub>4</sub>) H P O<sub>4</sub> ..... Am. Sod. phosphate.

364. Cu ..... Copper.

365. Fe SO<sub>4</sub> ..... Ferrous sulphate.

366. Fe S ..... Ferrous sulphide.

367. K Cl O<sub>3</sub> ..... Potassium chlorate.

368. K<sub>2</sub> Fe (CN)<sub>6</sub> ..... Potassium ferriocyanide.

369. Na H C<sub>4</sub> H<sub>4</sub> O<sub>6</sub> ..... Sodium bitartrate.

370. Na N O<sub>3</sub> ..... Sodium nitrate.

371. Starch.

372. Testpaper.

373. Zinc.

374. (N H<sub>4</sub>)<sub>2</sub> H P O<sub>4</sub> ..... Ammonium phosphate.

775. Blank.

○ Net price per dozen, \$1.35.      ○ Per gross, \$13.00 Net.

○\* 5714. **4 Oz. Salt Mouths.** Height, 4½ inches.

301. Na<sub>2</sub> C O<sub>3</sub> ..... Sodium carbonate.

302. K N O<sub>3</sub> ..... Potassium nitrate.

303. K C N ..... Potassium cyanide.

304. Na<sub>2</sub> B<sub>4</sub> O<sub>7</sub> ..... Borax.

305. Fe SO<sub>4</sub> ..... Ferrous sulphate.

307. Blank.

312. Test Paper ..... No Symbol

○ Net price per dozen, \$1.93.      ○ Per gross, \$20.50 Net.

—\* 5715. **Bottles, Tinctures for Reagents, glass stoppered, with vitrified label, best German.**

White enameled label, with very distinct letters in black, the letters and background are indestructible, forming the most perfect reagent bottle made. These bottles furnished duty free to institutions at very reasonable rates. These bottles can also be furnished with transparent letters in white vitrified label. Complete sets like list No. 5706, always on hand.

Contents,      2,      4,      6,      8,      12,      16,      32 oz.

Each,            .50,    .60,    .70,    .80,    .90,    1.00,    1.35.

\* 5715b. Above bottles, if ordered duty free, will be provided with labels a, b, c, d, or e, according to selection.

See also page 339.



- 5716. Bottles, Reagents, salt mouth with flat or high stopper, and vitrified labels.

Contents,	2,	4,	6,	8,	12,	16,	32 oz.
Each,	.60,	.70,	.80,	.90,	1.00,	1.10,	1.50.

5717. Ditto, ditto, with vitrified label, glass stopper and ground glass cap, like figure 5692, for fuming substances viz., Acids, Ammonia, etc.

Contents,	5,	10,	20 oz.
Each,	\$1.00,	1.20,	1.40.

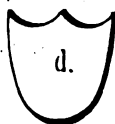
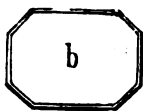
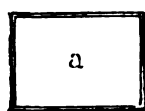
Ditto, ditto, without label. (See 5692.)

5718. Bottles Reagent, glass stopper, with engraved label, made to order. Price same as those with vitrified labels. Nos. 5715-5716.

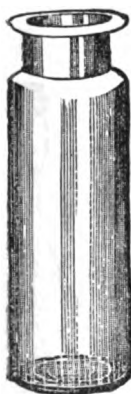
**Reagent Bottles Filled.** See Reagents and Catalogue of Chemicals.

- \* 5719. Ditto, Ditto, Homœopathic. Best quality.

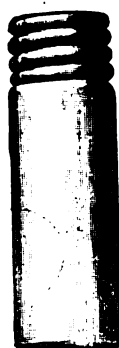
Contents,	$\frac{1}{2}$ ,	1,	2,	3,	4,	6,	8 dram.
Regular form, Gross,	.75,	.85,	1.00,	1.20,	1.80,	2.40,	3.00.
Long style, " "	.75,	.85,	1.00,	1.20,	1.80,	2.40,	3.00.



5715b.



5719



5720



5721



5725

- \* 5720. Bottles, Homœopathic, nickel plated screw cap.

1 dr.	2 dr.	3 dr.	4 dr.	8 dr.
\$2.00,	2.50,	2.70,	3.10,	5.40 per gross.

Bottles, Woulff's. See Woulff's Bottles.

- \* 5721. Ditto, ditto, with ground glass cap and glass rod for microscopic work, to hold Balsam Fir, etc. Each .40 cts.

5722. Ditto, with pipette stopper, one ounce. Each .40 cts.  
Bottles for dry samples and specimens, see specimen tubes.

5723. Bottles, with ground hollow stopper, similar to 5721, allowing a spoon to remain in the bottle, very handy for reagents that are in constant use.

2 oz.	4 oz.
30 cts.	40 cts.

- 5724. Bottles, of Gutta percha for hydrofluoric acid.

1,	4,	8,	16 ounce.
Doz. 3 60,	6 00,	8 00,	11 00.
Each. .40,	.55,	.85,	1 10.

- \* 5725. Ditto, ditto, for very small specimens, rare metals, etc., glass stoppered.

Dimensions,	$1\frac{1}{2} \times \frac{1}{4}$ ,	$1\frac{1}{2} \times 7-16$ ,	$2 \times \frac{1}{4}$ ,	$2 \times 7-16$ in.
Per dozen,	.60,	.70,	.60,	70 cts.

Other Bottles for specimens, (see Bottles, Homœopathic and Specimen Jars.)

- 5726. Bottles, for Specific Gravity, unadjusted for self-adjustment, very light in glass, stopper perforated. Shape like 5727.

Capacity about 10 CC.	25 CC.	50 CC.
Each, .25,	.30,	.40.

- \* 5727. Ditto, ditto, for Specific Gravity, adjusted with utmost accuracy, very light, stopper perforated.

Capacity,	10 CC.	25 CC.	50 CC.	100 CC.
Each,	.60,	.80,	1.10,	1.20.

5728. Ditto, in tin case with tare weight, 1.50, 1.60, 2.00, 2.40.

5729. Ditto, ditto, for Specific Gravity, same as above, but gauged in grains, shape like 5727.

Capacity,	100,	500,	1000 grains.
Each,	.60,	1.00,	1.20.

5730. Ditto, in tin case with tare weight, 1.50, 2.00, 2.40.

- \* 5731. Ditto, ditto, for Specific Gravity; new style, (Geissler's); with fine long thermometer and capillary tube and ground glass cap to prevent evaporation or overflow.

Capacity,	10 CC.	25 CC.	50 CC.	100 CC.
Each,	\$3 00	3 10	3 25	3 50

- \* 5732. Ditto, ditto, for Specific Gravity, of light blown glass with a fine thermometer ground into the neck; exactly adjusted to 1,000 grains each.

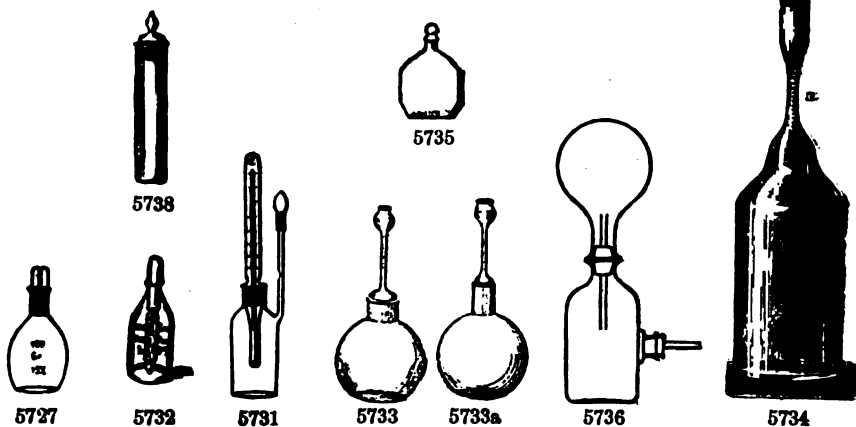
Price.....\$2 40

- \* 5733. Bottle for taking the Specific Gravity of Solids; according to Regnault.

Small,	Large,
25 CC.	50 CC.
.45	.50 each.

- \* 5733a. Ditto, for liquid bodies.

25 CC.	50 CC.
.45	.50



- \* 5734. Specific Gravity Bottle, according to Fresenius, for determining the specific gravity of gases in Mineral Waters.

Small,	Large,
.75	\$1 00

- \* 5735. Bottles for Spectral Analysis; small, flat, with ground stopper and parallel cut surfaces; in two sizes, Diameter about 0.5 or 1 ctmr. for estimating the absorption lines of liquids. Price 40 cts. each.

Bottles for determining the specific gravity of gases, after Bunsen, and Pneumatic trough for same, see apparatus, Bunsen's.

- \* 5736. Bottle, for constant water-level, 16 oz. capacity, \$1 00.....quart, \$1 25

5737. Ditto, for weighing; glass stoppered; very light in glass, high shape.

2 x $\frac{1}{2}$ in.	2 $\frac{1}{2}$ x $\frac{1}{2}$ in.	3 x $\frac{1}{2}$ in.	4 x 1 in.	5 x 1 in.
.18	.20	.22	.25	30 cts. each.

- \* 5738. Ditto, with flat bottom, 25% additional.

- \* 5739. Bottles, for weighing; conical, with flat bottom, low shape; glass stoppered.  
Capacity,  $\frac{1}{2}$  oz. 30 cts. 1 oz. 40 cts. 2 oz. 50 cts.

**Bottle Brushes** (see Brushes.

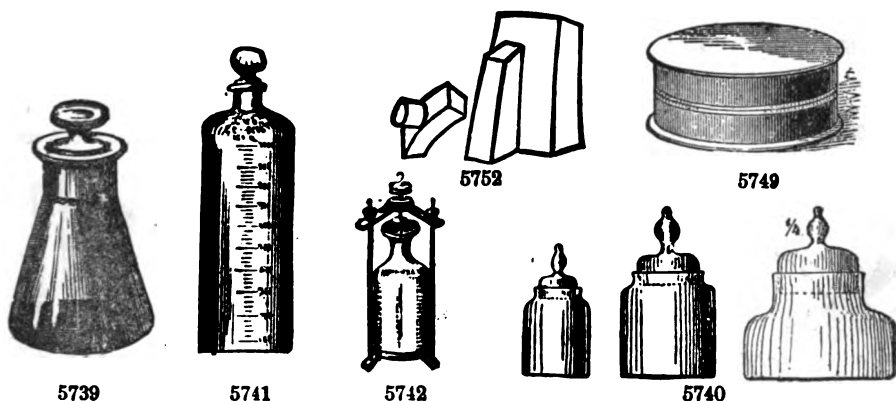
- \* 5740. Bottles, for weighing filters, very light glass, extra wide mouth, ground glassstopper.

Height, 2 inch, diameter,	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$ in.
Each,	.30	.35	.40

- \* 5741. Bottles, mixing, glass stoppered, graduated in  
250 CC. \$1 25. 500 CC. 2 00. 1,000 CC. \$ 00 each.
- \* 5742. Bottles, compressing, for conversions and digestions, of heavy and well annealed glass, used for the analysis of beer, etc. Capacity, 125 CC. with metal frame .... \$2 75.....250 CC.....\$3 00
- 5743. Bottles, glass stoppered, for vapor density determinations, according to Hoffman.  
Small, dozen, \$1 20. Large, 1 50.

**Boxes, of pasteboard, of round shape.**

- 5744. Boxes, plain, red, (American), 3 in nest, 1 doz. nests.....20 cts.  
Small, Medium, Large,  
Ditto, Singly, .25 .40 .45 cts. per gross.
- 5745. Ditto, ditto, bronze (English), 3 in nest, 1 doz. nests.....25 cts.  
Small, Medium, Large,  
Ditto, Singly, .70 .70 .70 per gross.



- 5746. Boxes, ditto, flat, white glazed paper.  
No. 47.....gross, 85  
" 48....." 1 00  
" 49....." 1 20
- 5747. Ditto, ditto, glazed paper, assorted colors.  
No. 50.....gross, 1 20  
" 51....." 1 35  
" 52....." 1 50
- 5748. Ditto, ditto, of turned wood.  
Contents, 1 2 drams.  $\frac{1}{2}$  1 2 3 4 8 oz.  
Gross, .22 .33 .45 .65 \$1.00 1.40 1.70 3.50
- 5749. Boxes of white glazed paper, square, each containing 10 small boxes...gross, 15 00  
 $\frac{1}{2}$   $\frac{1}{2}$   $\frac{1}{2}$  1 2 3 4 6 8 oz. capacity.
- 5750. Boxes of seamless tin, .40 .50 .70 1.00 1.60 2.10 2.50 3.05 3.55 gross.
5751. Ditto, ditto, of metal or glass, to hold twine.....50 cts.
- \* 5752. Bricks and Linings, of best fire clay; for building assay furnaces, etc., furnished of any size at reasonable rates.

## BRUSHES.

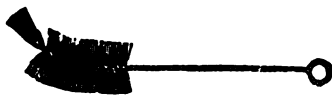
5753. **Brushes, of glass, for acids.** (See Acid Brush.) Each ..... 25 cts.  
 5754. Ditto, ditto, for cleaning test tubes on tinned iron wire. Each, 5 cts.; doz., 30 cts.  
 \* 5755. Ditto, ditto, for cleaning test tubes, plain, on brass wire, much stronger and superior ..... Each, 8 cts.; doz., 75 cts.  
 \* 5756. Ditto, ditto, ditto, with sponge end on brass wire..... Each, 10 cts.; doz., 90 cts.  
     Thin or thick for narrower or wider tubes.  
 \* 5757. Ditto, for cleaning narrow tubes. Each..... 4 cts.  
     Per doz ..... 15 cts.  
 5758. Ditto, 3 feet long. Each ..... 15 cts.  
 5759. Ditto, ditto, large, for cleaning cylinders and large tubes, bottles, etc., handles of brass on small sizes, rattan on large sizes.
- |           |     |     |        |
|-----------|-----|-----|--------|
| 10        | 12  | 15  | 20 in. |
| Each, .10 | .12 | .15 | .20    |

Larger Brushes to order.

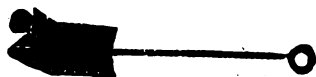
5760. **Brushes, best camel's hair.**
- |            |        |         |        |                           |
|------------|--------|---------|--------|---------------------------|
|            | Small, | Medium, | Large, | Extra large, double quill |
| Per dozen, | .20    | .25     | .35    | .75 cents.                |
5761. Ditto, ditto, for assay buttons, genuine, Freiberg..... 50 cts.  
 5762. Ditto, ditto, for cleaning scale pans, etc, flat.
- |             |        |          |
|-------------|--------|----------|
| 1 in. wide, | 1½ in. | 2 in.    |
| .20.        | .25.   | .30 cts. |
5763. Ditto, ditto, for cleaning the iron plate of ore crusher.
- |       |        |       |       |         |
|-------|--------|-------|-------|---------|
| 2 in. | 2½ in. | 3 in. | 4 in. | 4½ in.  |
| .25   | .35    | .60   | .75.  | 90 cts. |
- 5763a. Brush for beakers ..... each 25 cts.



5757



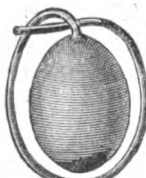
5755



5756



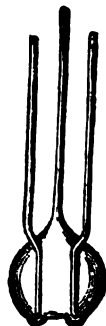
5767



5768



5765

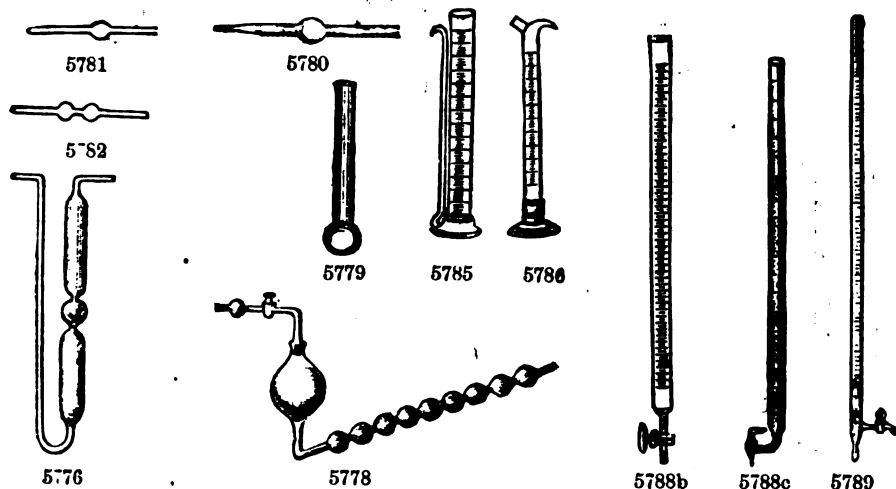


5775

5764. **Buckskin for assayers, according to size and quality.**
- \* 5765. **Bulbs, rubber, for pipettes, small,** 2 CC..... 5 cts. 5 CC..... 10 cts.  
 5766. Ditto, ditto, ditto, medium, 20 to 25 CC..... 20 cts.  
 \* 5767. Ditto, ditto, ditto, large, 40 to 50 CC..... 25 cts.  
 \* 5768. Ditto, of pure rubber, with long flexible tube attached for gas analysis apparatus; Orsat, etc. Each ..... 40 cts.  
 5769. Ditto, double acting, for gas analysis, taking gas samples, etc..... \$2 50  
 5770. Ditto, of rubber, double, for constant atomizers, small Blast, etc..... \$1 50  
 5772. Blast, extra large, Plattner's blast ..... \$4 00  
 5773. Bulbs, of rubber, single, with valves for atomizers, etc..... 35 cts.  
 5774. Bulbs, of thin rubber, for Scheibler's bone black apparatus..... 25 cts.  
 \* 5775. Bulb Apparatus, with long neck and with two tubes sealed in; capacity 150 CC.  
     Price..... \$1 00 each.



- \* 5776. Bulb Tube, U shaped, according to Todd ..... 60 cts. each.  
 5777. Bulb Tube, with 10 bulbs; for the determination of sulphur in iron ore by the aid of bromine; according to J. Meyer. .... \$1 25 each.  
 Similar to No. 5778.  
 \* 5778. Ditto, ditto, ditto, the same, with glass stop-cock ..... \$2 50 each.  
 \* 5779. Bulb Tubes, of hardest Bohemian glass, for ignitions. Bulbs on the end.
- |  |     |     |     |     |                |
|--|-----|-----|-----|-----|----------------|
|  | 4   | 5   | 6   | 7   | 8 in.          |
|  | .15 | .18 | .20 | .25 | .30 cts. each. |
- \* 5780. Ditto, bulb in the middle ..... 20 cts. each.  
 \* 5781. Ditto, ditto, ditto, one bulb in the middle. Each ..... 20 cts.  
 \* 5782. Ditto, ditto, ditto, two bulbs in the middle. Each ..... 35 cts.  
 5783. Ditto, ditto, of soft glass.
- |  |     |     |                |
|--|-----|-----|----------------|
|  | 1   | 2   | 3 Bulbs.       |
|  | .15 | .20 | .25 cts. each. |
- Ditto, ditto, for air thermometers (see figure 5044.)  
 5784. Diameter of bulb from  $1\frac{1}{2}$  in. 2 in.  $2\frac{1}{2}$  in. 3 in.  
 .25 .30 .35 .40 cts. each.



## BURETTES.

Our Burettes are not what are usually offered but are most accurately graduated and are of the best make for Scientific work.

See also pages 280, 342 and 383.

- \* 5785. Burettes, Gay Lussac's, with polished wooden base.

25 CC 1-10	50 CC 1-10	100 CC 1-2	100 CC 1-5
\$1 10	1 60	1 80	2 25

- \* 5786. Ditto, ditto, Bink's English form, with case.

10 CC 1-10	25 CC 1-10	50 CC 1-5	50 CC 1-100	100 CC 1-2	100 CC 1-5	200 CC.
.90	\$1 10	1 40	1 60	1 80	2 25	2 50

5787. Ditto, ditto, ditto, graduated into 125 grains, \$1 00. 250 grains, 1 20.

- \* 5788. Burettes, with Geissler's, Mohr's or Fresenius' perfect glass stop-cocks. Most accurately graduated, style a, b, and c. (For a, stop-cock like 5789.)

10 CC 1-10	25 CC 1-10	50 CC 1-5	50 CC 1-10	100 CC 1-5	100 CC 1-10
1 30	1 60	1 85	2 00	2 60	3 00

- \* 5789. Burettes, arranged to be used with glass stop-cock or pinch-cock.

25 CC 1-10	50 CC 1-10	100 CC 1-5	100 CC 1-10
\$1 70	2 20	2 80	3 20

5790. Burettes, with two stop-cocks, one below and another one at the side for re-filling. Price..... \$1 00 higher.

\* 5791. Burettes, with side tube, to be filled from reservoir.

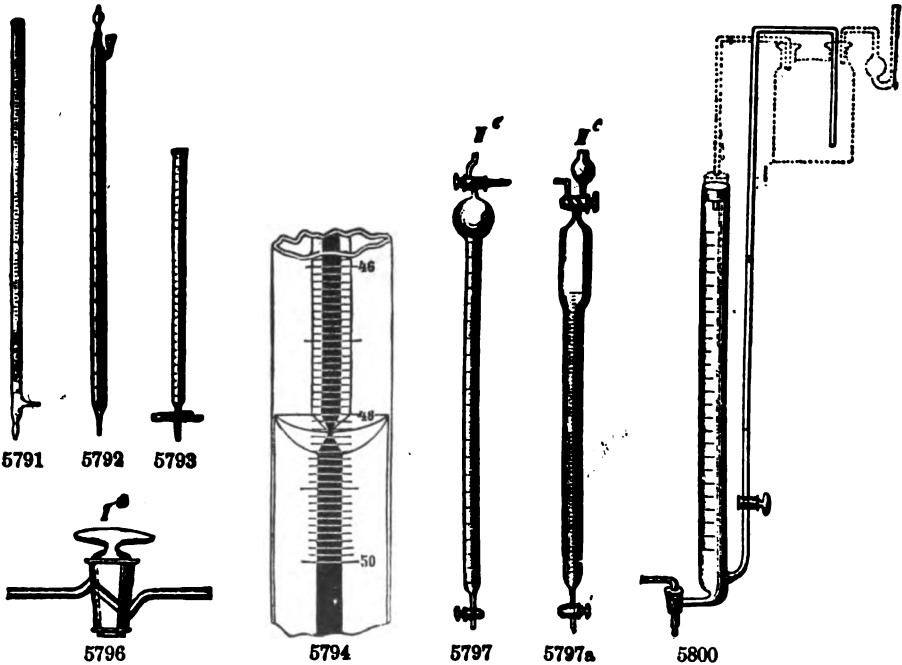
25 CC 1-10	50 CC 1-10	100 CC 1-5	100 CC 1-10
\$1 00	1 50	1 70	2 40

—\* 5792. Burettes, with ground glass rod inside as stop-cock, same as used by United States Navy Laboratory, etc.

25 CC 1-10	50 CC 1-10	100 CC 1-5
\$1 25	2 00	2 50

\* 5793. Burettes, Mohr's, with tip, for use with pinch-cock.

10 CC 1-20	20 CC 1-10	25 CC 1-5	25 CC 1-10	30 CC 1-10
.70	.75	.75	.80	1.00
50 CC 1-5	50 CC 1-10	100 CC 1-5	100 CC 1-10	100 CC single
\$1 25	1 35	1 80	2 25	1 40



\* 5794. Burettes of new design, having two sides white enameled, the remaining sides being transparent, admitting of dark or light liquids, being read with equal rapidity and accuracy.

25 CC 1-10	50 CC 1-10	100 CC 1-5
\$2 00	2 50	3 25 with stop-cock, like 5788b.
1 20	1 75	2 40 plain, for pinch-cock.

5795. All our burettes will be provided with funnel top if so ordered at 15 per cent. additional. Floats, 25 cts. Pinch-cocks, 20 cts. extra.

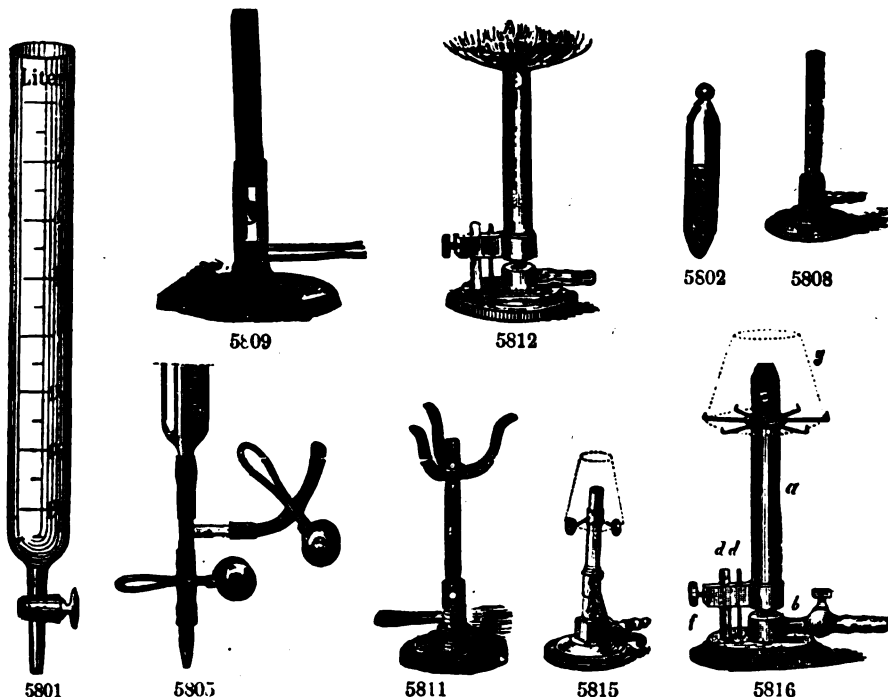
\* 5796. All our stop-cock burettes can be had with our new (patent) absolute tight stop-cocks at small additional expense.

\* 5797. Burettes, Hempel's and Winkler's, for gas analysis, (see Gas Burettes and Apparatus), 1 a, 1 b.

**Burette Stands or Holders, (see Supports for Burettes.)**

**Burette Clamp, Mohr's and Hofmann's, (see clamps.)**

- \* 5800. Burette, with side tube and stop-cock to connect with a reservoir for refilling; according to Gavalowski; for permanganate, etc.
- |            |           |            |            |
|------------|-----------|------------|------------|
| 25 CC 1-10 | 50 CC 1-5 | 50 CC 1-10 | 100 CC 1-2 |
| \$3 00     | 3 38      | 4 00       | 3 75 each. |
- \* 5801. Burette for dispensing expensive liquids; graduated up to  $\frac{1}{2}$  Litres in  $\frac{1}{4}$  Litre; with Geissler's stop-cock..... \$4 00 each.  
1 Liter.....\$5 00. 2 Liter.....\$6 00 each.  
See also Clamps.
- \* 5802. Burette Float, Erdmann's, each..... 25 cts.  
See also Floats.
5803. Burette, tip of glass ..... each, 5 cts. Dozen, 30 cts.
5804. Burette Tips, with rubber and pinch-cock..... 25 cts.
- \* 5805. Burette Attachment, three ways for connecting the burette with reservoir to refill, complete..... 50 cts.
5806. Ditto, ditto, with one screw-stop and one pinch-cock..... 60 cts.
5807. Burette Caps to protect the inside of burettes from dust, etc.  
Each, 10 cts. Dozen, 50 cts.



## BURNERS.

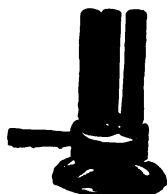
- \* 5808. Burners, Bunsen's, plain, each..... 35 cts
- \* 5809. Ditto, ditto, with regulator for the air, the best burner made, all parts interchangeable, large..... 40 cts.
5810. Ditto, ditto, ditto, larger tube,  $\frac{1}{2}$  in. bore x 5 in., twice the flame of above..... 60 cts.
- \* 5811. Ditto, ditto, with tripod on top, for heating dishes, etc., each..... 70
- \* 5812. Ditto, ditto, Bunsen's, especially made to burn gasolene gas and natural gas..... 75 cts.
5813. Ditto, ditto, ditto, large size..... \$1 25
5814. Ditto, ditto, ditto, regular style, with air-regulator and stop-cock for gas. Price..... \$1 00
- \* 5815. Ditto, ditto, French Pattern, with lever stop-cock, raising air-regulator, at the same time..... \$2 00
- \* 5816. Ditto, ditto, full flame, after Terquem; with arrangement for raising or lowering air regulator, star chimney, stop-cock, etc..... \$2 50

- \* 5817. Burners, ditto, according to Terquem; with stop-cock, adjustable sliding chimney and supports for holding wire nipple; expressly arranged for spectroscopical examinations.....\$8 00

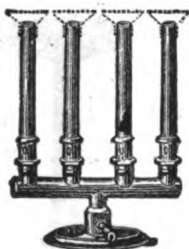
Burners, specially constructed for natural gas and gasolene.

See numbers 5812, 5813, 5816, 5817.

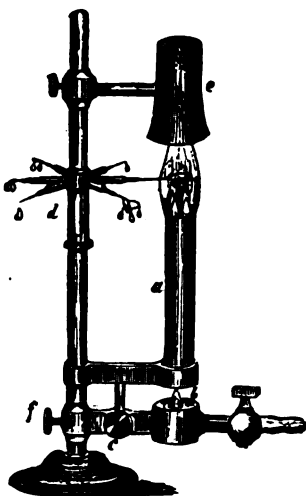
- \* 5818. Ditto, ditto, Bunsen's, with 3 tubes and regulators.....\$1 50  
 5819. Ditto, ditto, ditto, 4 tubes and regulators..... 2 00  
 5820. Ditto, ditto, ditto, 6 " " " ..... 2 80  
 5821. Ditto, ditto, ditto, 8 " " " ..... 4 00  
 5822. Ditto, ditto, ditto, 10 " " " ..... 5 00  
 \* 5823. Burner, Bunsen's, after Raab, with screw stop-cock, each burner on movable arm increasing or decreasing the heating surface, flames can also be placed in one row.....\$5 00



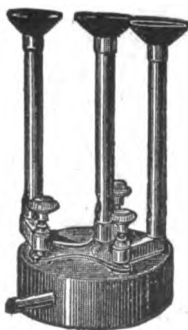
5818



5824



5817



5823



5823a

- \* 5823a. Burners in ring form, to heat and evaporate from the top of liquids, in beakers, etc., according to Professor Wolcott Gibbs.

Diameter of ring,	3	4	5	6 in.
	\$1 25	1 50	1 75	2 00

Support, 75 cents extra. If provided with stop-cock, 75 cents additional.

- 5823b. Ditto, for blast, for fusions, etc., where higher temperatures are required, with 2 stop-cocks and support.

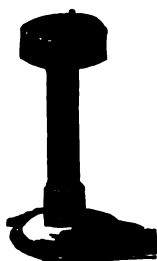
	3 in.	5 in.
	\$6 00	8 50

- \* 5824. Ditto, ditto, Bunsen's, in sets of 4, arranged so that several sets can be put close together to heat long tubes, etc., per set.....\$4 00  
 5825. Ditto, ditto, same with stop-cock for each burner..... 5 50  
 5826. Ditto, with adjustable forks on each end to support arsenic tubes, etc..... 7 00

- \* 5327. Ditto, ditto, Bunsen's, of very low shape, without regulator.....50 cts.  
 5828. Ditto, ditto, ditto, with regulator.....60 cts.  
 ○\* 5829. Ditto, ditto, ditto, with upright, blast, for gas and air, net.....\$3 50  
 Ditto, ditto, ditto, with small furnace, for blast, see blast lamps.  
 \* 5830. Burner, safety, self acting stop-cock, closing off gas when flame is blown out or  
 to protect and automatically close the gas main of laboratories.....\$10 50  
 5831. Burner, for spectroscope, height adjustable with chimney .....\$2 00  
 5832. Burner, microchemical, on tripod base with ring.....2 00  
 \* 5833. Ditto, ditto, on foot, with stop-cock and glass chimney, can also be used as a min-  
 ute burner.....\$2 00  
 5833a. Ditto, 2 flames on adjustable stand.....4 50



5833



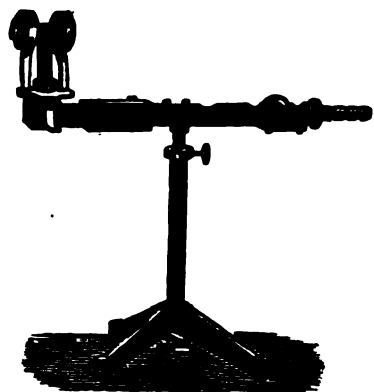
5834



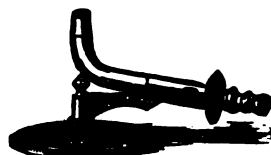
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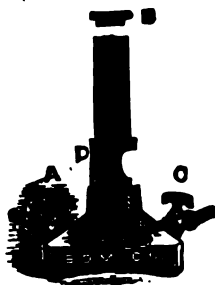
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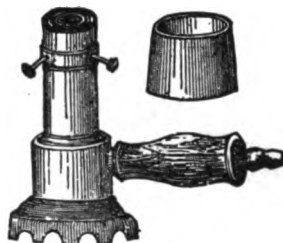
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5827



58.9



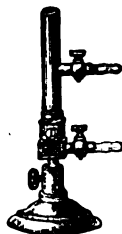
5839

- 5833b. Burner, small microchemical.....75  
 \* 5834. Burner, Bunsen's, with crown top; so-called small locomotive burner...75  
 5835. Ditto, ditto, extra large.....3 00  
 5836. Ditto, ditto, ditto, low shape.....4 00  
 \* 5837. Ditto, Flinkner's, most improved form, with arrangements to regulate gas and  
 air at the same time.....\$2 00  
 5838. Ditto, ditto, ditto, with chimney.....2 75  
 \* 5839. Burner, Erlenmeyer's argand flame, with iron chimney.....3 00  
 This burner is provided with wooden handle and regulator for the air, and is  
 considered to be the best round flame burner, for crucible operations.  
 \* 5840. Ditto, ditto, latest form, full flame, with improved air supply and regulation.  
 With star, clay and iron chimney.....\$4 00

- \* 5841. Burner, **Bunsen, with constant flame**; very practical for laboratory table. Price.....\$1 25
- \* 5842. Burner, **to illuminate working table**, a fish tail burner on base and tube standing 12 to 15 in. high.....\$1 00
5843. Ditto, ditto, with separate stop-cock..... 1 50
5844. Ditto, ditto, with Argand burner and stop-cock..... 2 00
- \* 5845. Ditto, ditto, **after Kellogg**; for gasolene; indispensable where a Bunsen's Burner flame is required and no gas available. It gives as much heat as several Bunsen Burners and is better than an alcohol lamp. There is no smell as the gas is consumed as soon as produced; no wick necessary. The laboratory lamp, complete as per drawing.....\$12 00
- 5845a. The Lamp itself.....\$7 50 Plain Burner..... 3 00
- Gasolene, 74°, for this lamp, gallon 30 cts., by the barrel..... 15 cts.
- See also 6716a.



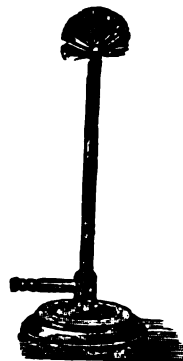
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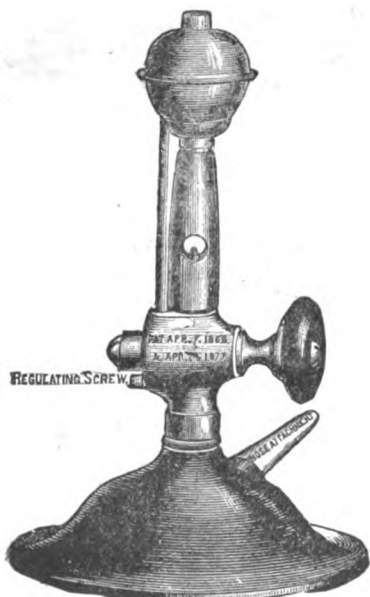
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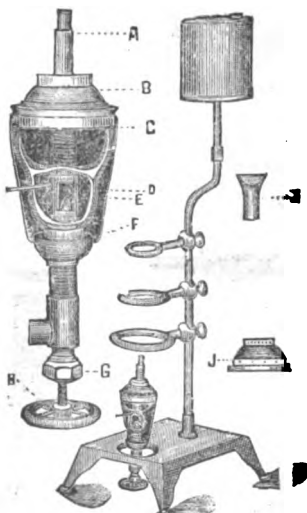
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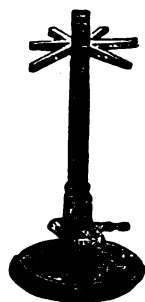
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5841



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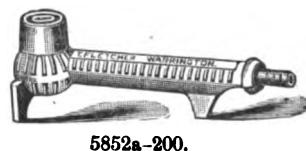
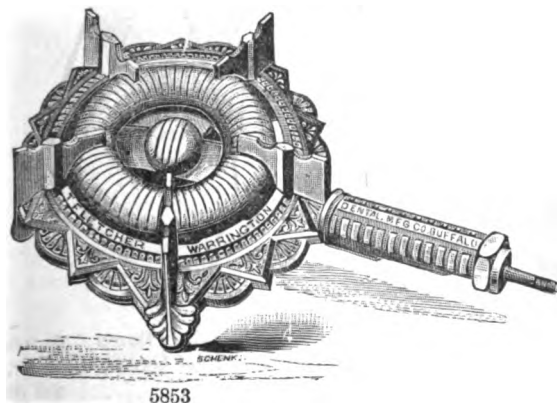
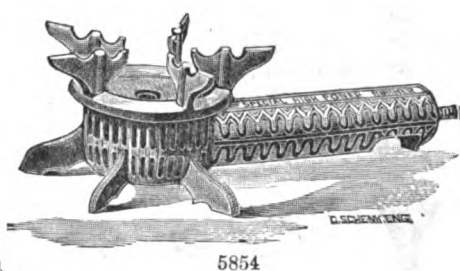
5847

- \* 5846. Burner, for high temperatures; for burning oxygen with illuminating gas, height adjustable.....\$4 00
- \* 5847. Ditto, for gas, with star to support a porcelain plate or chimney, and arrangement to slide on a fork (iron chimney, 20 cts. extra).....\$1 20
5848. ditto, ditto, with porcelain burner plate (same as figure 5857)..... 1 80
- \* 5849. Ditto, ditto, for gas; made of soap-stone; for use in poison cases..... 2 00
- See also Lamps and Blast Lamps.
- \* 5850. Burner, **New Evaporating**; for Glass and Porcelain Vessels and General Laboratory Work. This burner is a great improvement on the ordinary coil burner in use. The flame is blue and smokeless, and the total height of the burner is about 1½ inch.
- |         | 4      | 5    | 6½   | 7½   | 9½   | 10½  | 12 in. |
|---------|--------|------|------|------|------|------|--------|
| Copper, | \$1 50 | 1 75 | 2 25 | 3 00 | 3 50 | 4 00 | 5 00   |
| Iron,   | 1 00   | 1 25 | 2 00 |      |      |      |        |

- \* 5851. Burners, **Solid Flame Boiling; the best laboratory burner known**; large size for large pans, etc... 2 00, small..... 1 50
- \* 5852. Burner Nos. 200 and 201. Fletcher's Argand Bunsen. The flame of these burners is shorter, more compact, and higher in temperature than an ordinary Bunsen, and is also free from smell. The air supply is self-adjusting.

	Without tripod.	With tripod.
$\frac{3}{4}$ in. size, gas consumption 2 ft. per hour,	No. 200, \$ 50	No. 201, \$ 65
$\frac{1}{2}$ in. " " " 3 $\frac{1}{2}$ " "	" 75	" 95
$\frac{3}{4}$ in. " " " 7 " "	" 1 00	" 1 25
Spider-Ring, (for No. 201, $\frac{3}{4}$ in. only,).....		30 cents.
Attachment for air blast, affording a very strong heat extra.....		75 cents.

- \* 5853. Burners, Nos. 1 and 2 R. Fletcher's Radial Burners.
- No. 1 R. Burner Ring, 3 $\frac{1}{4}$  inches diameter..... \$1 50
- No. 2 R. Burner Ring, 5 inches diameter ..... 2 00



- \* 5854. Burners, No. 52. Fletcher's Special High Power. The laws ruling the construction of heating burners as given in Mr. Fletcher's communication to the Gas Institute, and published in the Transactions for 1883, have been strictly adhered to in these burners, which, for their size, are unapproached in power by any burners in existence. The dimensions of these burners are as follows :

Size across the gauze surface.	Gas consumption in cubic feet.		Gas pipe required.
○ No. 52a. 2 $\frac{1}{2}$ in. diameter.	25 ft.	per hour.	$\frac{3}{8}$ in. clear bore.
○ No. 52b. 4 in. "	40 ft.	"	$\frac{1}{2}$ in. "
○ No. 52c. 6 in. "	90 ft. to 100 "	"	$\frac{3}{4}$ in. "
○ No. 52d. 8 in. "	200 ft. to 250 "	"	1 or $\frac{1}{2}$ in. "
○ No. 52a.	No. 52b.	No. 52c.	No. 52d.
\$2 25	3 00	5 50	11 00

The 6 in. and 8 in. sizes have no tripod or support for vessels, as the burners are too small to carry the vessels they will heat.

5855. **Burner Attachment**, plate for expanding the Bunsen burner flame. . . . . 25 cts.  
 \* 5856. **Burner Attachment, Wingtop**, fitting our Bunsen's burners; are used for bending glass tubes nice round. Each. . . . . 15 cts.  
 \* 5857. **Burner**, plates of porcelain to attach to Bunsen's burner, in blow-piping. . . . . 60 cts.  
 5858. **Burner Fork**, to fit No. 5847, Bunsen's burner, for attaching to a support. Each. . . . . 40 cts.  
 \* 5859. **Burner Crown**, fitting our Bunsen burners; giving a round flame, for heating dishes. Each. . . . . 45 cts.  
 \* 5860. **Burner Chimney**, of Russian iron. Each. . . . . 20 cts.  
 \* 5861. **Burner Tips**, with rest for the blow-pipe, to set on top of Bunsen's burners. Each. . . . . 20 cts.  
 \* 5862. **Burner Tube**, for blow-piping with yellow flame, fitting inside the tube or passing over it. Each. . . . . 20 cts.  
 5863. **Burner Tripod**, large; to fit on top of Bunsen burners for supporting dishes. etc. Each. . . . . 30 cts.  
 5864. Ditto, ditto, small. . . . . 20 cts.  
 5865. Bursting squares of thin glass for expansion experiment. Dozen. . . . . \$3 00  
 5866. **Button Brushes**, genuine bristle. . . . . 50 cts.  
 5867. **Button Forceps**, steel, Swansea style. . . . . \$1 00  
 5868. Ditto, ditto, Plattner's form. . . . . 60 cts.  
 5869. **Button Nippers**, plain, 50c. nickel plated, 75 cts.



5856



5857



5859



5860



5861



5862



5869a



5873



5877

- \* 5869a. **Candle Bombs**, small glass bulbs, filled with colored liquids. Dozen. . . . . 40 cts.  
 5870. **Calcium Light**, (Drummond light) complete with burner, lime holder, reflector, clamp and rod. . . . . \$15 00  
 5871. Ditto, ditto, 1-15 and 1-30 gallon, gas bags, with stop-cocks, 2 gas generators, wash bottles, rubber tube connections, additional. . . . . \$50 00  
 5872. **Calorimeter**, according to Fischer, with one platina Basket, for the estimation of temperatures above 1,000° C. . . . . \$75 00  
 \* 5873. **Calorimeter Ice**, according to Bunsen,  
     Price, small, \$1 00      Medium, \$1 25      Large, \$1 60  
 ○ 5874. **Canada Balsam**, clear, 50 cents. filtered, \$1 00, dry, 2 25 per pound.  
 — 5875. **Caoutchouc** in sheets, so-called Bandage Gum, very strong, used for making stoppers air-tight, etc. . . . . oz. 25, lb. \$2 50  
 5876. **Caoutchouc Stoppers** (see Rubber Stoppers), plain or perforated, per lb. . . . . 2 00  
 \* 5877. **Calipers**, self-registering, for taking inside and outside measure of glass tubing. nickel plated.

3	4	5	6 in.
.75	.85	\$1 00	1 20



- 5878. Candles, standard, for photometric test, per pound, (12 make a pound).....\$2 50  
Capillary Tubing, see Glass Tubing.

For other Capsules, of porcelain, glass, platinum, silver, etc., etc., (see Evaporating Dishes and Platinum.)

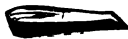
5879. Capsules of very thin glass,  $2\frac{1}{2}$ – $2\frac{1}{2}$  inch diameter; used in organic analysis; Hoffmeister's Schälchen, per dozen.....\$1 25  
5879a. Capsules of tin foil, for milk analysis,  $2\frac{3}{4}$  x  $\frac{1}{4}$  inch; gross .....1 75  
\* 5880. Capsules, of Royal Meissen porcelain, as used in Columbia College, 2 inches diameter, by 1 inch deep, by 2 inches diameter, No. 1.....20 cts.  
5881. Ditto, ditto, ditto,  $\frac{1}{4}$  inch deep, by  $1\frac{1}{4}$  inch diameter, No. 2.....15 cts.  
If numbered with black letters in sets of 1-6, large size, per set.....\$5 00  
5882. Ditto, ditto, Mixing, Plattner's, brass. Each.....25 cts.  
\* 5883. Ditto, ditto, horn. Each.....15 cts.  
5884. Ditto, ditto, ditto, of gilded metal. Each.....45 cts.  
5885. **Carbon Plates** for Bunsen, Grenet, Smee, and other Batteries.

In. Thick.	In. Wide.	In. Long	Price.	In. Thick.	In. Wide.	In. Long.	Price.
$\frac{1}{4}$	9	11	\$ 75	$\frac{1}{4}$	$2\frac{1}{4}$	6	\$0 25
$\frac{1}{4}$	$2\frac{1}{4}$	$3\frac{1}{4}$	06	$\frac{1}{4}$	9	11	1 10
$\frac{1}{4}$	$1\frac{1}{4}$	$4\frac{1}{4}$	06	$\frac{1}{4}$	$4\frac{1}{4}$	7	35
$\frac{1}{4}$	$1\frac{1}{4}$	$4\frac{1}{4}$	06	$\frac{1}{4}$	$\frac{3}{4}$	6	08
$\frac{1}{4}$	$1\frac{1}{4}$	$5\frac{1}{4}$	08	$\frac{1}{4}$	9	12	1 25
$\frac{1}{4}$	6	10	45	$\frac{1}{4}$	10	12	1 30
$\frac{1}{4}$	6	12	60	$\frac{1}{4}$	12	12	1 40
$\frac{1}{4}$	12	12	1 00	$\frac{1}{4}$	6	12	80
				$\frac{1}{4}$	6	9	65

Carbon Plates, any size, to order.



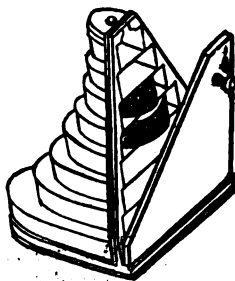
5880



5883



5886a



5888

5886. **Round Carbons**, 12 inches long, for Electric Lamps.

Diameter,	1-16,	1-8,	3-16,	1-4,	5-16,	3-8,	7-16,	1-2,	inches.
Price,	\$0 05,	.05,	.05,	.07,	.08,	.10,	.10,	.12,	
Diameter,	9-16,	5-8,	3-4,	7-8,	1,	$1\frac{1}{4}$			inches.
Price,	\$0.14,	.15,	.18,	.20,	.22,	.25,			

- \* 5886a. **Carbon Filter**, of glass, for Gooch filters, etc.

Inside diameter of wide tube,	$\frac{3}{4}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	in.
	.15	.20	.25	.30	

5887. **Carboys**, contents, 10 gallons; glass balloon; boxed in case.....\$2 00

- \* 5888. **Cases of Japanned Tin**, to hold cut filters, from  $2\frac{1}{4}$  to 6 in diameter, 6 sizes.  
Price.....\$3 50

5889. Ditto, ditto, ditto,  $2\frac{1}{4}$  inches to 8 inches, 8 sizes.....4 00

**Cases for Scales** (see Scale Cases.)

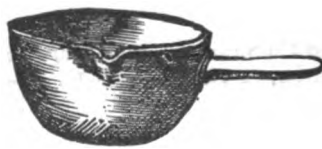
5900. **Cartesian Imps**.....20 cents each.  
5901. Ditto, ditto, with joints.....25 cents each.

**Complete Set of Apparatus for colormetric carbon tests, according to latest methods.**

5902. Dissolving bottles, dozen .....\$1 00
5903. Racks, of copper, to hold the dissolving bottles while weighing and dissolving, for 12 tubes .....\$1 25
5904. Ditto, ditto, for 25 tubes .....\$2 50
5905. Water Tray, of copper, to set copper racks in while dissolving .....\$15 00
- 5905a. Ditto, ditto, small, □ to take 12 tubes ..... 5 00
- 5905b. Ditto, ditto, round tin 2 00, copper .....3 80
5906. Nitric Acid, strictly c. p., specially prepared for carbon tests, in 7 lb. bottles. Per lb. ....15 cts.
- \* 5907. Bottles, with ground in stop-cock as reservoir for acid. Similar to 5368.
- |          |               |      |      |      |        |
|----------|---------------|------|------|------|--------|
| 2 pints. | $\frac{1}{2}$ | 1    | 2    | 3    | 8 gal. |
| \$2 25   | 2 50          | 3 50 | 4 50 | 5 00 | 12 00  |
5908. Copper bath for heating the tests, for 52 tubes .....\$15 00
- Ditto, ditto, for 100 tubes ..... 20 00
5909. Carbon tubes, for Eggertz color test for the estimation of Carbon in steel.
- |                                     |         |                 |             |
|-------------------------------------|---------|-----------------|-------------|
| 25 CC. in 1-10 lbs. in sets of two, | \$2 25. | In sets of four | .....\$4 50 |
| 30 CC. in 1-10 lbs.                 | "       | "               | 4 50        |
| 50 CC. in 1-5 lbs.                  | "       | "               | 5 00        |
| 50 CC. in 1-10 lbs.                 | "       | "               | 5 50        |
| 100 CC. in 1-5 lbs.                 | "       | "               | 6 00        |
5910. Ditto, Ditto, test tube form.
- |               |             |             |             |             |
|---------------|-------------|-------------|-------------|-------------|
| 5 CC. in 1-10 | 10 CC. 1-10 | 15 CC. 1-10 | 20 CC. 1-10 | 25 CC. 1-10 |
| \$0.50,       | .55,        | .60,        | .65,        | .75 each.   |
5911. Ditto, ditto, test tube form, not graduated, in sets of 1 dozen, to agree .....\$1 25
- \* 5912. Carbon Filters. See figure 5886a.
- |  |                      |                                   |                                   |
|--|----------------------|-----------------------------------|-----------------------------------|
| 3 in. $\times$ $\frac{3}{4}$ in. bore. | 3 in. $\times$ 1 in. | 3 in. $\times$ $1\frac{1}{8}$ in. | 3 in. $\times$ $1\frac{1}{2}$ in. |
| \$0.15                                 | .20,                 | .25,                              | .30                               |
5913. Ditto, ditto, of Platinum .....70 cents per gramme.
5914. Support for Carbon tubes, test tube form, wood, for 1 dozen ..... 50 cts.
5915. Ditto, ditto, for 24 tubes .....\$1 00
- 5916. A wooden support with the base covered with a milk glass plate, with standard colors, in sealed tubes .....\$4 00
- Other sizes furnished to-order.
5917. Color Comparator box, plain, for 2 carbon tubes ..... 4 00
- Ditto, ditto, mounted adjustable stand ..... 8 00
5918. Calcium light and reflector for the color reading box .....\$20 00
- 5919. Balance, rapid weighing, sensitive to one milligram, E. & A. glass case ..... 20 00
- Without case ..... 11 00
5920. Special spring balance ..... 15 00
- 5921. Standard steel to order ..... 60 cents per oz.



5922, (1-3),



5922, (3a-7),

## CASSEROLES.

Allow us to call attention to the fact that all our Berlin china is from the Royal factory.

- \* 5922. Casseroles, of best Royal Berlin china, with porcelain handles.

No.	1,	2,	3,	3a,	4,	5,	6,	7.
Contents,	$\frac{1}{2}$ ,	$1\frac{1}{2}$ ,	3,	6,	12,	24,	48,	64 oz.
Diameter,	2,	$2\frac{3}{4}$ ,	$3\frac{1}{4}$ ,	$3\frac{3}{4}$ ,	$4\frac{1}{4}$ ,	$5\frac{1}{4}$ ,	$6\frac{1}{4}$ ,	— in.
Price,	\$0.35,	.40,	.50,	.70,	.90,	1.40,	1.75	3.00

- 5922a. Ditto, ditto, of Thuringia porcelain, same shape as No. 5922 3a-7.

Capacity, 8 oz., 50 cts.

12 oz., 65 cts.

- \* 5923. Casseroles, of German porcelain, with cover, lip, and wooden handle.
- |                 |                 |           |         |
|-----------------|-----------------|-----------|---------|
| Diameter, 3 in. | Contents, 4 oz. | each..... | 50 cts. |
| " 4 "           | " 8 "           | " .....   | 60 "    |
| " 4½ "          | " 12 "          | " .....   | 70 "    |
| " 5½ "          | " 16 "          | " .....   | 90 "    |
| " 6 "           | " 24 "          | " .....   | 1 25    |
| " 6½ "          | " 32 "          | " .....   | \$1 60  |
- \* 5924. Ditto, ditto, Royal Berlin porcelain, deep form.
- |              |                     |       |                         |        |                          |      |
|--------------|---------------------|-------|-------------------------|--------|--------------------------|------|
| Depth, 6 in. | Contents, 1,050 CC. | Price | } wood handles, { ..... | \$2 00 |                          |      |
| " 7 "        | " 1,900 CC.         | "     |                         |        | } 25 cts. extra. { ..... | 2 50 |
| " 8 "        | " 3,230 CC.         | "     |                         |        |                          |      |
- \* 5924a. Cells, for electric batteries, see porous cups, all sizes, from 4 up to 8 inches.  
Price.....15 to 80 cts.
- \* 5925. Casserole agateware,
- |                  |        |        |        |
|------------------|--------|--------|--------|
| Pint,            | 24 oz. | Quart, | ½ gal. |
| Diameter, 4½ in. | 5 in.  | 6 in.  | 7 in.  |
| .25              | .30    | .35    | .40    |
- 5926. Chalk Sticks, or Lime Cylinders, prepared for Drummond's calcium light,  
per doz.....\$1 20
5927. Chamois Skins, of best quality, according to size and dressing....25 to 60 cts.
- \* 5928. Charcoal Borers, Plattner's, wooden handle.
- |                    |                    |
|--------------------|--------------------|
| 4-cornered, small, | Club shape, large, |
| 45 cts.            | 60 cts.            |

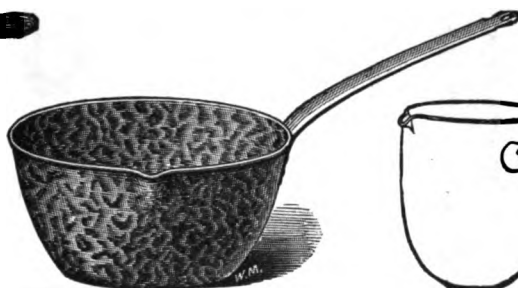
For others, see Appendix Blow-piping Apparatus.



5923



5924a



5925



5924



5928

5929. Charcoal Sticks for cutting glass, each 10 cents, per doz.....80 cts.
5930. Charcoal, of hard wood, in pieces, for blow-piping, imported or our own  
make, dozen .....50 cts.
5931. Ditto, ditto, artificial, ½ x ¾ x 3, dozen.....50 cts.
5932. Charcoal, for Plattner's Charcoal Holder, square, with groove in centre, each 10 cts.  
Dozen .....75 cts.
5933. Charcoal Capsules and Crucibles, Plattner's, dozen.....20 cts.  
(For other blow-pipe goods, see also appendix.)
5934. Charcoal Saws. Each.....30 cts.
- 5934a. Charts, technological, all kinds imported to order.
- Chemicals** (see our list of Chemicals).
5935. Chimney, of Russian iron, to set on Bunsen's burners.  
Small, 20 cts. Large, 25 cts.
5936. Chimney, of clay, according to Prof. Erdman.....20 cts.
5937. Ditto, ditto, ditto, with ring or tripod inside .....25 cts.  
If fitted with iron chimney on top.....25 cents extra
5938. Chimney, of iron, clay lined, for polariscope lamps.....\$1 50

5939. Chisels, steel, for breaking minerals.

Length about	5	5½	6½	1 in. face. 7½ inch long. .45 cts. each.
	.20	.25	.30	

\* 5940. Chloride Calcium Jars, on foot, with tubulature near the bottom, with narrow or wide neck.

Height,	8	10	12	16	18	24 in.
	.50	.60	.75	\$1 35	2 25	4 00

\* 5941. Chloride Calcium Tubes, with one bulb.

Length,	3	4	5	6	8	10 in.
	.10	.10	.11	.12	.14	.18 cts.

Measure taken from behind the bulb.

\* 5942. Ditto, ditto, with two bulbs in two sizes.

Length,	3	4	5	6	7	8	12 in.
	.10	.10	.12	.14	.15	.18	.25 cts.

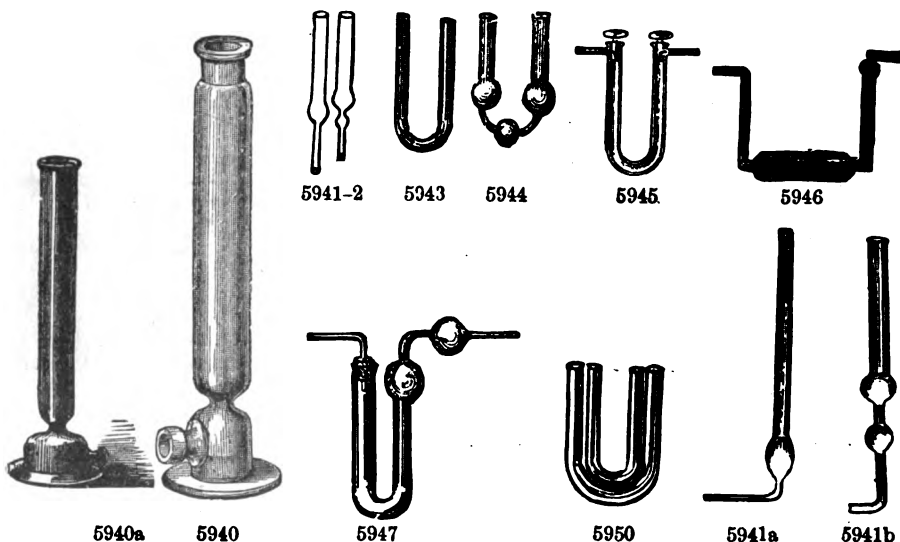
Nos. 5941 and 5942 if ordered with tube bent at right angle, \* 5941a and \* 5941b, 15% extra.

\* 5943. Ditto, ditto, plain, U shape, light or heavy in weight. In ordering please state outside diameter of tubes.

3	4	5	6	7	8	10	12 in.
.12	.14	.16	.20	.25	.35	.40	.50 cts.

\* 5944. Ditto, ditto, U shape, with three bulbs.

3	4	5	6	7	8 in.
.20	.25	.30	.40	.55	.70



\* 5945. Ditto, ditto, ditto, recent form, with side tubes and perforated glass stoppers, to keep dry. The advantages of this tube are readily seen.

5 in.	6 in.
\$1 30	1 40

\* 5946. Ditto, ditto, according to Liebig; plain or with side tube.

5 in.	6 in.
.35	.40

\* 5947. Ditto, ditto, according to Prof. Marchand in three sizes.

4 in.	5 in.	6 in.
.30	.35	.40

5948. Ditto, ditto, with permanent side tube, same price.

\* 5950. Ditto, ditto, U-shaped, two in a nest, the smaller fitting inside the larger, same as used in School of Mines, per set. . . . . 40 cts.

- |  |      |      |       |
|--|------|------|-------|
| * 5951. Chloride Calcium Tubes, with small inside tube, to collect moisture in first |      |      |       |
| bulbs, according to Prof. Mixer.   | 5,   | 6,   | 8 in. |
|  | .20. | .25. | .30.  |

- |   |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| * 5952. Chloride Calcium Tubes, U-shape, with side tubes. |                 |                 |                 |                 |                 |
| Length,   | 4,              | 5,              | 6,              | 7,              | 8 inch.         |
| Diam.   | $\frac{1}{2}$ , | $\frac{3}{4}$ , | $\frac{1}{2}$ , | $\frac{3}{4}$ , | $\frac{1}{2}$ " |
| Each,   | .15,            | .20,            | .25,            | .35,            | .40.            |

- |                                       |      |      |       |
|---------------------------------------|------|------|-------|
| * 5953. Ditto, according to Vollhard. | 5,   | 6,   | 8 in. |
|                                       | .80. | .35. | .50.  |

**5954. Chloride Calcium Tube, with ground stopper and with Geissler's stopcock.**  
 Price, each.....\$ 2 00

- \* 5954a. Chlorine Apparatus, of acid proof stoneware, (Generators) with ground air-tight covers.

**Capacity, 6, 12, 20, 25, 30, 38, 45, Gallons.**

**Price.** 3.75, 5.50, 7.50, 9.25, 11.00, 13.75, 16.00, each.

- |                                       |      |      |       |       |       |       |       |                 |
|---------------------------------------|------|------|-------|-------|-------|-------|-------|-----------------|
| ○ 5954b. The perforated inside vessel | .80, | .95, | 1.25, | 1.55, | 1.85, | 2.50, | 3.10, | each additional |
|---------------------------------------|------|------|-------|-------|-------|-------|-------|-----------------|

**Capacity,      50,      55,      60,      70,      75 gallons.**

Price,	\$18.50,	21.75	25.00,	28.00,	31.00.	each.
--------	----------	-------	--------	--------	--------	-------

	1900,	1905,	1910,	1915,	1920,	1925,	1930,
The per. inside vessel,	3.75,	4.35	5.00,	5.50,	6.25	each additional.	

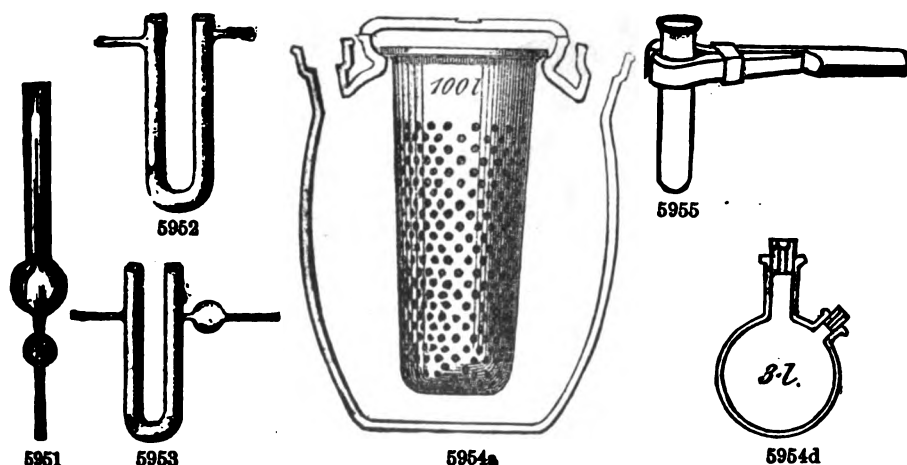
**The last three sizes are only made to order.**

- 5964c. **Above Chlorine Apparatus** if ordered with outlet near the bottom 50 cents.  
Each additional, if ordered with ground in stopcock the price of stopcock and 50  
cts. for grinding will be added.

- \* 5954d. Chlorine Generators, of acid proof stoneware, with 2 tubes ground in.

Capacity,  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{1}{2}$  Gallon.

**Price, 1.25, 1.40, 1.55, 1.70, 2.15, 2.65, 3.00, 3.75 each.**



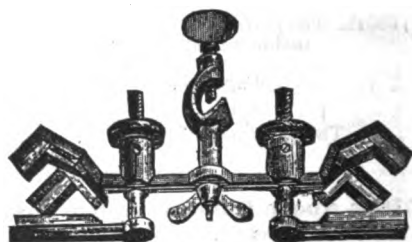
## CLAMPS.

- \* 5955. **Clamps, wooden, of improved construction, for holding test tubes.**  
Each..... 15 cts.

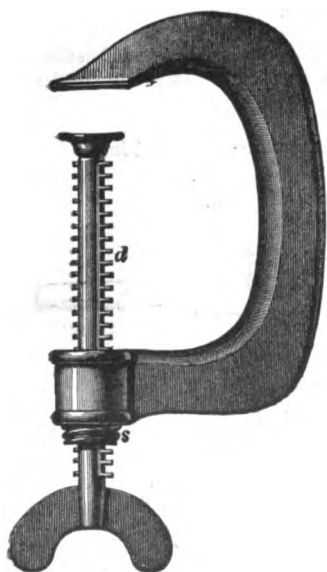
- \* 5956. Clamps, Wooden, for holding larger tubes or flasks, with spring.  
Each ..... 40 cts.
5957. Ditto, ditto, of brass, for holding small and large tubes, etc., Bunsen's form.  
Each ..... 30 cts.
- \* 5958. Clamps of Iron, to fasten apparatus to the table.  
2, 2½, 3, 4, 5, 6, 7, 8, 9, 10 in.  
.20, .25, .30, .40, .50, .55, .70, .85, 1.20, 1.50.
- \* 5959. Ditto, ditto, of iron, to attach to a retort stand. This is a  
good arrangement to hold burettes, with checknut  
to adjust position ..... 40 cts.
5960. Ditto, ditto, of brass, with checknut to adjust posi-  
tion ..... 65 cts.
5961. Ditto, ditto, nickel plated ..... 80 cts.



5956



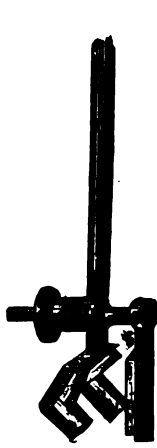
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5958



5959



5962



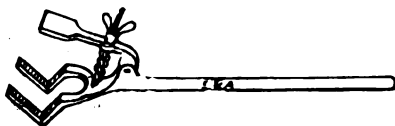
5964

- \* 5962. Ditto, ditto, Hofmann's style, small, metal, with universal movement ..... 65 cts.
- \* 5962a. Ditto, ditto, double, according to Prof. Hofmann, to  
hold burettes or other tube apparatus, adjustable to  
any retort stand, etc ..... 75 cts.
5963. Clamp, with fastener, Bunsen's, small universal, com-  
plete ..... 70 cts.
- \* 5964. Ditto, ditto, of iron, Bunsen's, with universal movement  
for holding small tubes as well as condensers, to  
attach to retort stand. Complete with fastener. 80 cts.

- \* 5965. Clamps, of Iron, **extra large** ..... \$1 00  
 5966. Ditto, **universal, double jointed**, retort and condenser clamp grasping irregular shaped objects. Complete with attachment. .... 1 25  
 Like clamp in, a. s. z., as shown in large cut of universal support, Fig. 8228.  
 \* 5966a. **Clamp fastener**, or German muffle, for attaching clamps or rods to any iron support. Small ..... 20 cts. Large ..... 25 cts.  
 \* 5967. Ditto, ditto, universal to set at any angle. Each ..... 50 cts.  
 \* 5968. Clamps, Hofmann's of improved make, nickel plated, a screw compressor.  
 Small opening,  $\frac{1}{4} \times \frac{1}{4}$  ..... 20, Medium,  $\frac{1}{2} \times \frac{1}{2}$  ..... 25, Large,  $1\frac{1}{2} \times 2\frac{1}{2}$  ..... 30.  
 \* 5969. Ditto, ditto, **screw compressors of improved construction, can be attached to tubing without opening joints.** Each ..... 30 cts.  
 \* 5970. Clamps, Mohrs, for burettes, etc., nickel plated.  
 Small ..... 10 cts. Medium for burettes ..... 15 cts. Large for  $\frac{1}{4}$  in. tubing ..... 20 cts.  
 Extra large for  $\frac{3}{4}$  in. tubing ..... 25 cts. Double extra large from  $\frac{1}{2}$  to 1 in. .... 35 cts.  
 5971. Clamps, Mohrs, with set screw. .... 30 cts.  
 5972. Clamp Screw to screw to table very strong. .... 50 cts.  
 5972a. " Squibb's spring ..... 12 cts.



5966a



5967



5973



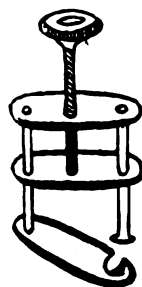
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5968



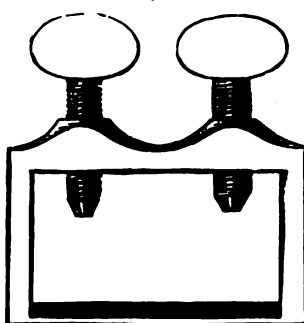
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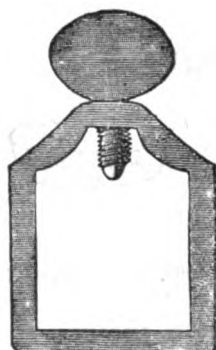
5969



5970



5973a-2.



5973a-1.

- \* 5973. Clamps, according to Bunsen, two bars with screws at each end ..... 50 ct.  
 \* 5973a. Ditto, ditto, of brass, for Bunsen's Battery Carbons.  
 No. 1 ..... 15 cts. No. 2 ..... 25 cts.  
 5974. Clays, Erdmann's, to set upon a tripod, each ..... 10 cts.  
 5975. Ditto, ditto, iron, with ring on points inside ..... 25 cts.  
 5976. Ditto, ditto, with tripod. .... 50 cts.  
 Ditto, ditto, for Combustion Furnaces, see Tiles and Slides.  
**Cleaners**, for test tubes, etc. (see Brushes and Sponge Swabs.)  
**Clips**, for watch glasses, see Watchglass Clips and holders.  
**Cobalt Bottles**, see Acid Bottles shape a and b.

5977. **Cobalt Colored Glass.** (blue), for observing the potassium flame.

2 in. square.	3 in. square.	1x2 $\frac{1}{2}$ in.
6 cts.	8 cts.	6 cts.

\* 5973. **Colanders**, of porcelain. Hemispherical, with and without lip.

Diameter,	6 $\frac{1}{2}$ .	5.	4 $\frac{1}{2}$ .	3 $\frac{1}{2}$ .	2 $\frac{1}{2}$ .	2 in.
Price,	.75.	.50.	.45.	.35.	.30.	25.

- \* 5979. Colanders, with straight sides and flat bottom.  
                                 Diameter, 12½, 9½, 5½ in.  
                                 Price, \$2.00, 1.50, .75.
- \* 5980. Ditto, ditto, with handle. Of stoneware.....\$1.50. Of porcelain.....\$2 50

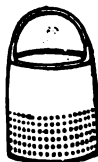
See also Strainers.

**Cold Chisels, see chisels.**

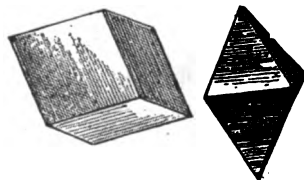
- \* 5981. Collection of 114 Crystal Models, according to Naumann & Hausmann, made of strong pasteboard the ground forms and combinations in different colors, sizes 5-6 Centimeter.....\$25 00
- 5982. Ditto, according Professor Rose, 108 pieces, of pear wood size abt. 4 Ctm. in wooden box.....\$20 00
- 5983. Set of 368 selected forms of pear wood of great perfection 5 cm. in size, suitable for large Universities.. .....\$150 00
- 5984. Set of 700 typical models of all crystallized minerals after Professor P. Groth, size 5 ctm. latest selection, imported to order only duty free.....\$450 00
5985. Ditto, of 50 crystal models after Professor Prokorny, made of a nice white mineral composition. These models are perfect and very natural in appearance, their low price will enable students to purchase complete sets.
- a. Collection of 50 pieces, stearin coated.....\$16 00
- b. Collection of 100 pieces " " ..... 28 00
- c. Collection of 250 pieces " " ..... 50 00
5986. Set of 25 models of Crystal Glaze; in velvet lined box..... 25 00
5987. Set of 50 in 5 velvet lined cases, large size..... 50 00



5979



5980



5981

5988. Collection of **Diamond imitations**, the 15 largest and most famous diamonds; in case .....\$23 00
- 5989. Collection of 21 imitations of **precious stones**, of colored Bohemian crystal glass; in velvet lined case.....\$17 25
5990. Collection of 100 blow-pipe specimens, in boxes, with glass covers and index.....\$7 00
5991. Ditto, ditto, according to Plattner, 100 specimens in bottles; in box with catalogue .....\$9 00
- 5992. Ditto, of 64 metals, in handsome glass-stoppered vials, and elegant case...\$30 00
5993. Ditto, of minerals, 100 specimens, in pasteboard boxes..... 7 00 12 00
5994. Ditto, ditto, large specimens..... 25 00

Partition boxes, of pasteboard, for 25 models..... 1 00

**Other Collections, see Appendix and Chemical List.**

5995. Collection of minerals to order according selection from \$50 00 to \$300 00.
- 5996. Collection of 52 alcaloids, in ½ gramme vials in elegant case.....\$28 00
- 5997. Ditto, of 72 alcaloids and glucosides, in ½ gramme vials in elegant case.... 40 00
- 5998. Ditto, of 80 physiological preparations, in elegant case ..... 24 00

See also Special List of Chemicals and Minerals.



- \* 6000. **Color Comparator**, Prof. Leeds, for the quantitative determination of substances in solution, by the relative depth of tint of a certain color. With prism..... \$15 00  
 One dozen glasses for same..... 2 50
- 6001. **Colorimeter**, Stammer's, for comparative color test in sugar analysis, plain form..... \$40 00
- \* 6002. **Ditto, ditto**, latest improved form..... 60 00  
 Other Colorimeter see under apparatus, and Carbon test, Eggerts for Color comparison.



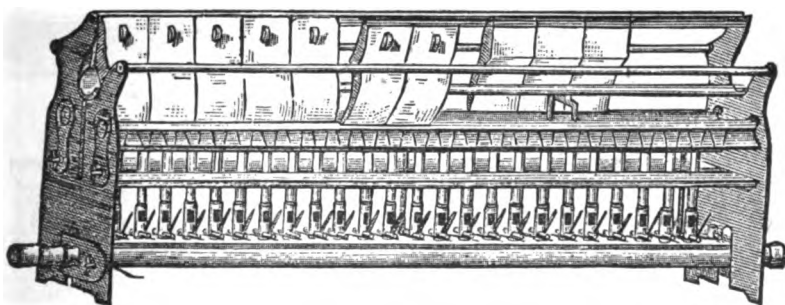
6000



6003



6002



6005

- \* 6003. **Combustion Boats**, of porcelain.

Length, 1-1½	2-2½	3-4 in.
.20	.25	.30 cts. each.

- 6004. **Combustion Tubes and Boats**, of platinum; of latest form, according to sizes and weight, per grainm..... 65 cts.  
**Combustion Foil and Combustion Netting**, see Copper Foil and Copper Gauze.

- \* 6005. **Combustion Furnaces**, of latest and most improved style, according to Bunsen, in four sizes, every burner provided with a separate stop-cock, extra tiles, clay and iron slides given with the furnace.

10	15	20	25 burners.
\$17 50	23 50	29 50	36 00

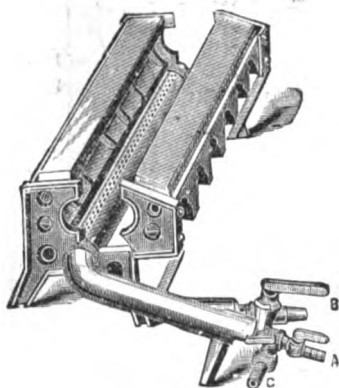
Larger sizes to order up to 50 burners. Also the row of Burners separately and further apart for agricultural analysis.

6006. Ditto, ditto, for **Gasolene gas or natural gas**. Same style as 6005.

10	15	20	25 burners.
\$19 00	25 00	32 00	40 00

○\* 8007. Combustion **Furnace, of low shape, after Th. Fletcher**, with adjustable flame and with or without adjustable blast, arrangement for high temperatures. It can be used with coal gas or with the Gasolene gas from generators No. 5318 (for particulars see special list.)

	For combustion tubes, 12 in.	18 in.	24 in.
<b>For draft or blast, with adjustable flame length.....</b>	<b>\$12 00</b>	<b>16 00</b>	<b>20 00</b>
<b>As above, without adjustable length of flame....</b>	<b>10 00</b>	<b>13 00</b>	<b>17 00</b>
<b>With fixed length of flame, without blast.....</b>	<b>8 00</b>	<b>11 00</b>	<b>14 00</b>
<b>Extra fine clay casing blocks, 6 inches long, each.....</b>	<b>50 cts.</b>		

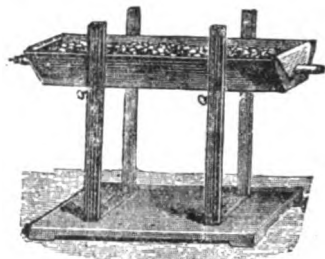


Engraving shows the Furnace open ready for the introduction of a tube.

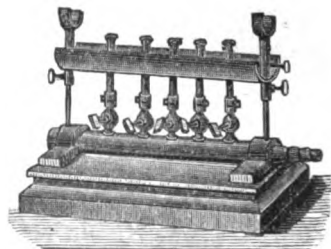
6007



6013



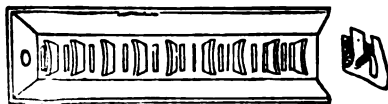
6012



6009



6011a



6011b

6008. Combustion Furnace, **with separable supports and frame**, permitting a change of length and a raising or lowering of the furnace as convenient.

With	2,	3,	4,	sets of four-tube Bunsen's burner's, each ar-
Price,	\$25 00	30 00	35 00	[ranged in a row on one base.

\* 6009. Ditto, Five Burners on base, with support.....\$14 00

6010. Combustion Furnace, Glaser's, with 21 burners..... 40 00

\* 6011. Ditto, ditto, for use with charcoal, according to Liebig.

Length,	18	24 in.
	\$2 50	3 00

For the prices of extra Clay Tiles and supports, see Tiles.

\* 6012. Combustion **Furnaces**, with adjustable support..... \$1 75 resp., \$2 00 extra.

\* 6013. Combustion **Spoons**, of iron, for burning phosphorus in oxygen, etc., in two sizes, spoon  $\frac{1}{2}$  in. and 1 in. diameter..... 15 cts.

6014. Ditto, ditto, extra heavy.....20 cts.

- \* 6015. Combustion Tubes, bent, ready for use in the combustion furnace, of hardest Bohemian glass. In ordering please state bore in millimeters.

Length, 12 14 16 18 20 24 30 in.

If bore is about 13 Milli. each, .18 .20 .25 .30 .35 .40 .45 cts.

6016. Ditto, ditto, with rounded end for absolute determination of nitrogen.

27 in. 30 in.

.45 .50 cts.

- \* 6017. Ditto, ditto, of porcelain, glazed inside, flanged, diameter inside, about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch.

Length, 12 18 20 22 25 30 in.

Each, .50 .75 \$1 00 1 25 1 50 2 00

- \* 6018. Ditto, ditto, inside diameter about 1 inch, flanged.

Length, 12 18 20 22 25 30 in.

Price, .85 \$1 00 1 25 1 50 1 75 2 50

2 inch bore, 25 per cent additional.

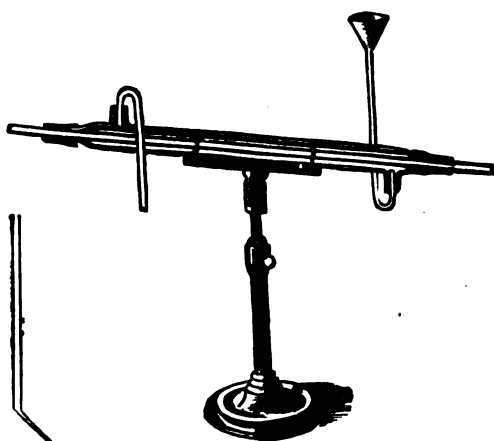
6019. Combustion Tubes of best Royal Berlin China, glazed inside and outside, 48 in. long, plain, not flanged. These tubes are unsurpassed in quality, will stand heating also the highest temperatures well.

Bore,  $\frac{1}{2}$   $\frac{3}{4}$  1  $1\frac{1}{2}$  1  $1\frac{1}{2}$  1  $1\frac{1}{2}$  in.

Each, \$6 00 8 00 10 00 12 00 14 00 16 00

See also Platinum.

6020. Combustion Tubing, best Bohemian glass, per pound, in 6 feet length, Price.....75 cts.



6015

6024



6022



6021

- \* 6021. Compasses, in metal case, with cover, best Paris make, arranged for surveying, with folding sights, agate, centre, stop to needle, etc.

Watch pattern,  $1\frac{1}{2}$  2  $2\frac{3}{4}$  in. diameter.

\$3 75 4 25 4 75

- \* 6022. Compass Miners, or Dipping Needle, for tracing iron ore, both sides covered. Price.....\$10 00

— 6023 Ditto, ditto, plain, watch form, open face,  $1\frac{1}{2}$  in. 50 cts. 2 in.....1 00

○ 6023a Ditto, closed face,  $1\frac{1}{2}$  in. 1 00. 2 in.....1 25



6017

## CONDENSERS.

- \* 6024. Condenser, Liebig's and Fresenius', made entirely of glass; latest and most improved style; only rubber connections. In ordering state whether end of tube is to be drawn out or cut off straight, without support.

Length of glass body, 10 12 15 20 25 30 40 in.

.85 \$1 00 1 10 1 25 1 80 2 00 3 00

- \* 6025. Ditto, Liebig's, made of brass, the condenser tube included. (If with rubber stoppers, price net.)

Length of brass body,	12	15	20	30	40 in.
	\$2 50	3 00	3 50	4 50	5 00

- \* 6026. Ditto, Mohr's, both tubes of glass, set with best corks.

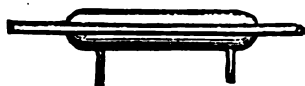
	12	15	20 in.
	\$1 00	1 20	1 30

Ditto, if ordered with rubber stoppers, the weight of the rubber will be charged with 15 cts. per ounce.

- \* 6027. Ditto, large, of heavy brass, with large oak-wood support; one-half gallon retort, large oak-wood table, to hold tripod or stove and sand bath, glass receiver and support table for same, the whole complete..... \$20 00



6026



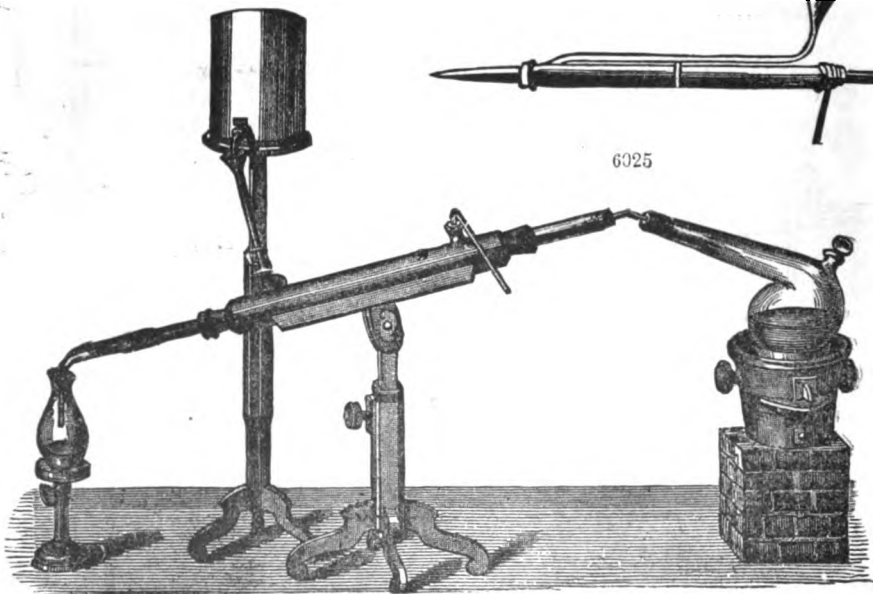
6028



6029



6025



6027

- \* 6028. Condenser, glass, condensing tube sealed in the glass body; water tubes set alternately or on one side as per cut.

Length of glass body,	8,	10,	12,	15,	20 in.
	.75,	.85,	\$1.10,	1.25,	1.50

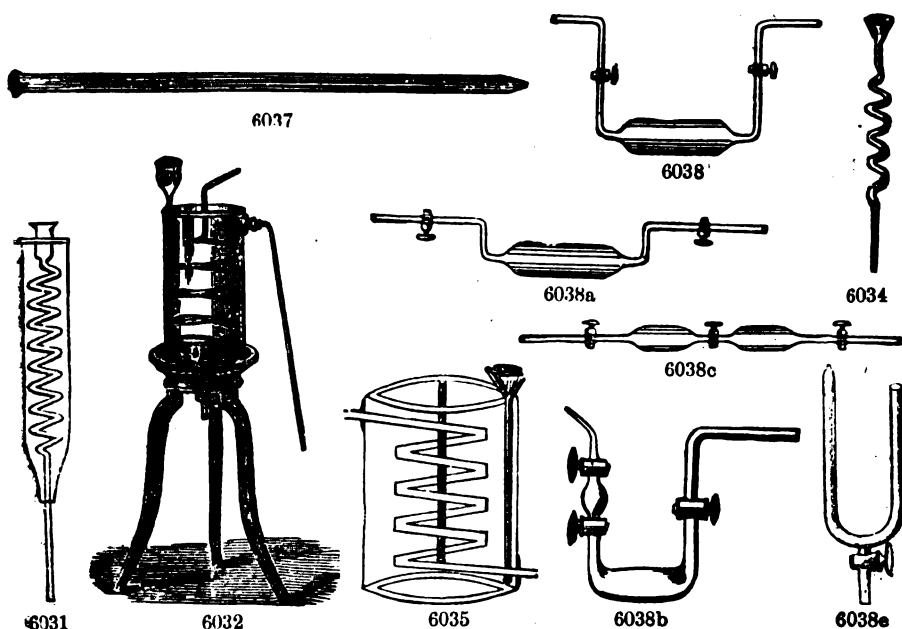
- \* 6029. Condenser, according to Allihn.

	10,	12,	15,	25,	30 inch.
	\$1.25	1.40	1.60	2.40	3.20

6030. Condenser, with greatest cooling surface, similar to No. 6028, but with a glass coil like 6031, fixed inside a condensing body.

	6,	8,	10,	12,	15,	18,	25,	30 in.
	\$1.00	1.25	1.50	1.75	2.75	3.00	4.00	6.00

- \* 6031. **Condensers, all glass, a glass worm inside of a conical glass vessel, with inlet for cold and outlet for the warm water.** Pint, 1.25. Quart, 1.50.  $\frac{1}{2}$  gal, 2.00
- \* 6032. Ditto, ditto, **with support.** Pint, 2.25. Quart, 2.50.  $\frac{1}{2}$  gal, 3.00.
6033. Ditto, **the worm alone.** .65, .85, 1.00 resp.
- \* 6034. Ditto, a small worm .....45 cts.
- \* 6035. Ditto, of zinc, with heavy block tin worm; Size to suit a.
- |       |                 |       |       |       |               |
|-------|-----------------|-------|-------|-------|---------------|
|       | $\frac{1}{2}$ , | 1,    | 2,    | 3,    | 5 gal. still. |
| Each, | \$2.25,         | 3.25, | 4.00, | 4.75, | 6.00.         |
- 6036. Condenser, of fine earthenware; a well-glazed stone worm, acid proof, for factory work, about one yard high; each.....\$30 00
- Condenser Stands and Supports, (see Supports for Condensers.)



- 6036a. Condenser, Prof. Oribb's glass, \$2.50; metal, \$3.75 each.
- \* 6037. Condenser Tubes, of German glass, all sizes, for use with adapter or adapter permanently attached.
- |         |     |     |     |     |     |     |        |
|---------|-----|-----|-----|-----|-----|-----|--------|
| Length, | 20  | 25  | 30  | 35  | 40  | 50  | 60     |
|         | .25 | .35 | .45 | .55 | .65 | .85 | \$1 00 |
- \* 6038. Condensers for Sulphurous Acid, with two Geissler's stop-cocks on the vertical limbs.....\$2 50
- \* 6038a. Ditto, ditto, ditto, two stop-cocks on the horizontal limb..... 2 50
- \* 6038b. Ditto, ditto, with three Geissler's stop-cocks and extra reservoir..... 3 75
- \* 6038c. Ditto, ditto, ditto, 2 bulbs and 3 stop-cocks in one line..... 3 50
- 6038d. Ditto, very large size, reservoir holding 250 CC., fitted into glass-footed jar. See Figure 5174 ..... \$5 50
- \* 6038e. Condenser for Sulphurous Acid, with one stop-cock, and with exit tubes..... 1 50

Condensing Pump, see Air Pump.

Condensing Tubes, **U** form and **W** form. See Tubes.

6039. Cones, of steel, with plaster mould to make platinum cones of correct angle from platinum foil. Each.....\$2 00

6039a. Cones, of platinum, adjustable for Bunsen's quick filtering apparatus. } See  
From 70 cts. to \$3.00. } Platinum  
Ditto, ditto, heavy, of one piece, no seam. 70 cts. per gramm.

\* 6040. Connections, of brass, for Bunsen's battery, to connect the carbon with the zinc.

No. 1.....20 cts.

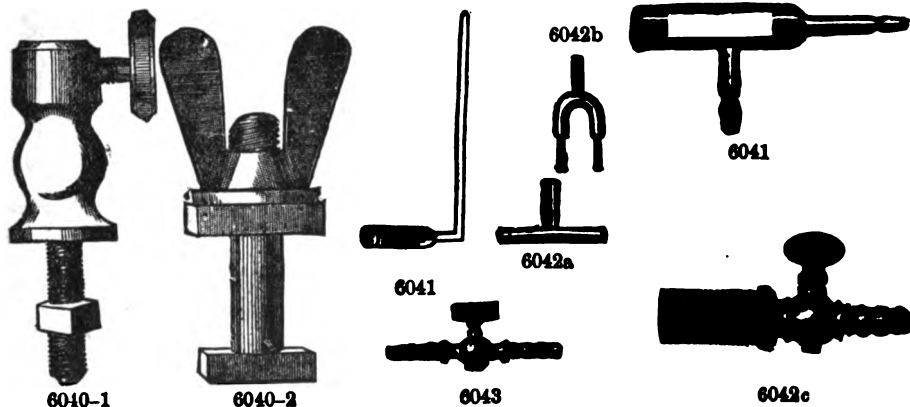
No. 2.....25 cts.

\* 6041. Connection Tubes, of glass, to connect supply pipe with burners, bore  $\frac{1}{8}$  inch.....35 cts.

\* 6042. Connectors, of brass, for gasbags, etc. Bore,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ , 1 in.  
.25, .30, .35, .40, .45.

\* 6042a. Connectors of Glass, T-form.

Bore,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , 1 in.  
.15, .18, .20, .25, .30, .35, .40, .50, .60



\* 6042b. Connectors, of glass.

Large end,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ , 1 inch.  
Small end,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ , "  
Each, .15, .18, .20, .25, .30, .35 cts.

\* 6042a. Ditto, Ditto, Ditto, with stopcock, 75 cts. to \$1.00 extra.

\* 6043. Ditto, ditto, for rubber tubing, with stopcock, each.....\$1 00

Ditto, for Wires, (See Binding Screws).

Coolers, (see Condensers.)

Cooper's Mercurial Receiver, (see Gasometer Tubes.)

— 6044. Copper Foil, of pure soft copper, heavy, per pound.....50 cts.

— 6045. Ditto, ditto, ditto, fine, per pound.....60 cts.

— 6046. Ditto, ditto, ditto, finest, c. p. per pound.....\$1 50

6047. Copper Gauze, coarse, for combustions in organic analysis. No. 40, per square foot.....70 cts.

6048. Ditto, ditto, fine No. 80, for combustions in organic analysis, square foot.....\$1 20

Copper Wire, per pound. Fine ..... 60 cts. Coarse..... 50 cts.

\* 6049. Corks, best quality, cut from selected wood, XX, regular length.

	No. 1,	2,	3,	4,	5,	6,	7,	8,	9,	10.
Diameter of small end,	$\frac{1}{4}$ ,	$\frac{5}{16}$ ,	$\frac{3}{8}$ ,	$\frac{7}{16}$ ,	$\frac{1}{2}$ ,	$\frac{9}{16}$ ,	$\frac{5}{8}$ ,	$\frac{11}{16}$ ,	$\frac{3}{4}$ ,	$\frac{7}{8}$ .
Price per gross,	.20,	.22,	.24,	.26,	.32,	.38,	.50,	.60,	.72,	.90,
	No. 11,	12,	13,	14,	15,	16,	17,	18,	19,	20.
Diameter of small end,	$\frac{1}{2}$ ,	$\frac{5}{8}$ ,	$\frac{3}{4}$ ,	1,	$1\frac{1}{8}$ ,	$1\frac{1}{4}$ ,	$1\frac{1}{2}$ ,	$1\frac{3}{4}$ ,	$1\frac{5}{8}$ ,	$1\frac{3}{4}$ in.
Price per gross,	\$1.00,	1.10,	1.20,	1.35,	1.50,	1.85,	2.00,	2.20,	2.40,	2.60.

6050. Ditto, ditto, extra long, No. 1 to 10, cost 25% higher.

\* 6051. Corks, flat, for wide mouth bottles, extra thick superior XX quality.

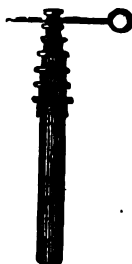
Diameter of larger end,	1,	$1\frac{1}{8}$ ,	$1\frac{1}{4}$ ,	$1\frac{3}{8}$ ,	$1\frac{1}{2}$ ,	$1\frac{5}{8}$ ,	$1\frac{3}{4}$ ,		
Price per dozen,	.10,	.12,	.15,	.18,	.20,	.23,	.25,		
Price per gross,	.80,	1.00,	1.40,	1.60,	1.85,	2.10,	2.50,		
Diameter of larger end,	$1\frac{1}{8}$ ,	2,	$2\frac{1}{8}$ ,	$2\frac{1}{4}$ ,					
Price per dozen,	.28,	.30,	.35,	.40,					
Price per gross,	3.00,	3.50,	4.00,	4.50,					
Diameter of larger end,	$2\frac{1}{2}$ ,	$2\frac{3}{8}$ ,	$2\frac{1}{2}$ ,	3,	$3\frac{1}{2}$ ,	4,	$4\frac{1}{2}$ ,	5,	6 in.
Price per dozen,	.55,	.60,	.75,	1.00,	1.20,	1.50,	2.25,	2.75,	5.00
Price per gross,	6.00,	7.00,	8.00,						



6051



6056



6053



6049

6052. Corks, X quality, the cork of the trade at one-half price of above.

Ditto, of India rubber (see Rubber Stoppers.)

\* 6053. Cork Borers, of polished brass, best make.

In sets of	6,	8,	12,	15,	3,	3.
					smallest	largest
					of	of
	1 to 6,	1 to 8,	1 to 12,	1 to 15,	1 to 6,	1 to 6.
	\$1.00,	1.50,	2.00,	2.60,	.60,	.75.

6054. Cork Borer sharpener, very practical, a steel cone, with knife.....\$1 00

6055. Cork Extractors ..... 25

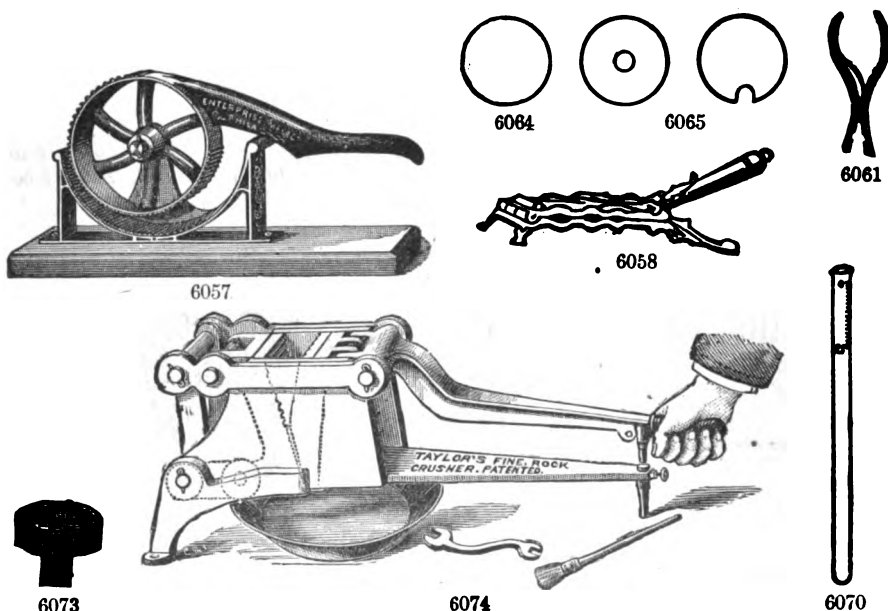
Cork Files, (see Files.)

\* 6056. Cork Knives, each..... 25 cts.

6056a. Cork Plates, 4x12 inches.

Thickness, $\frac{1}{4}$ ,	3-16,	$\frac{1}{2}$ in.
Each, .8,	.10,	.15 cts.

- \* 6057. **Cork Press, improved with wheel**, will compress corks from one-fourth to one and one-fourth inches in diameter, without liability of splitting them. The motion is a rolling one into the jaws of the press, rendering the cork round and tapering. Small ..... 50 cts. Large ..... 65 cts.
- \* 6058. Ditto, ditto, of cast iron.  
Small ..... 25 cts. Large ..... 30 cts.
6059. **Corkscrew**, best quality ..... from 25 to 50 cts.
6060. Ditto, ditto, folding ..... from 25 to 50 cts.
- \* 6061. **Cork Tweezers**, (tongs), steel ..... \$1 00
6062. Ditto, ditto, with teeth ..... 1 00
6063. **Covers, convex**, of glass, for covering beakers, etc., see Watchglasses.
- \* 6064. **Covers**, for beakers, etc., flat. Round glass plates.  
Diameter, 3, 4, 5, 6 in.  
.6, 8, 10, .15 cts.
- \* 6065. Ditto, ditto, with perforations in center or on side, for stirrers, 20 cts. extra for each perforation.



6066. **Covers, plain, straight, rough on one side.**  
2, 2½, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15 in square.  
Each, .3, .4, .5, .6, .8, .10, .12, .15, .20, .25, .30, .40 cts.
6067. Ditto, ditto, straight, of heavy plate glass, rough on one side.  
3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20 in. square.  
Each, .15, .20, .25, .30, .35, .40, .50, .80, 1.00, 1.60, 2.50.
6068. Ditto, for microscopic objects, very thin, round, see microscopic covers.
6069. Ditto, ditto, cut square, see microscopic covers.
- \* 6070. **Creamometers**, for determining the percentage of cream in milk, black graduation ..... 50 cts.
6071. Ditto, larger, on foot ..... 85 cts.
- \* 6072. Ditto, Chevaliers, with red lines ..... \$1 00  
See fig. 5312.
- \* 6073. **Crowns**, for Bunsen's burners, giving blue round flame. Each ..... 45 cts.
- \* 6074. **Crusher**, Hand size very effective and practical enabling a person quickly and easily to bring the hardest ores to fine powder. It is very substantial, does not get out of order and weighs only 95 lbs. Price ..... \$25 00  
Extra jaws ..... 1 25



- \* 6074a. **Crusher, Blake's, for Ores, laboratory size, improved so-called "Challenge Rock Breaker," for HAND and POWER.** This is the most perfect crusher and most valuable for the assay laboratory. Complete. Rubber cushioned.....\$65 00  
Larger sizes to order at manufacturer's price.
- 6074b. **Crusher and Pulverizer combined, Clarkson's No. 1..... 25 00**

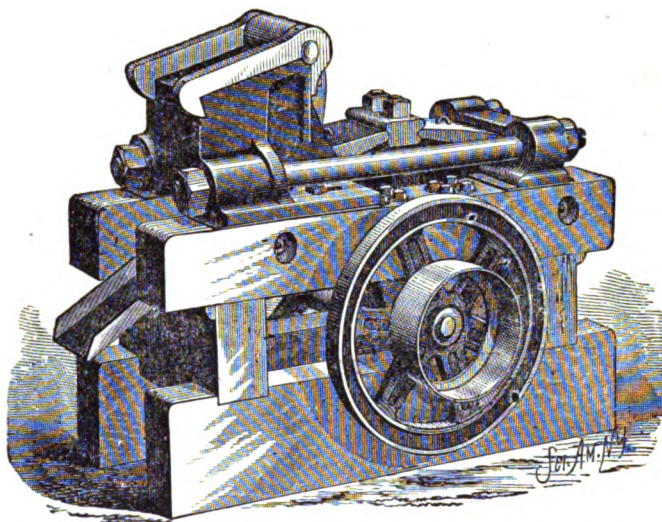
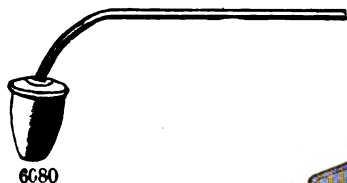
## CRUCIBLES.

- 6075. **Crucibles, black lead, Plumbago, Dixon's make.**

No.	00	0	1	2	3	4	5	6	7	8	9	10	12	14	16
Height outside,	2	2½	3¼	3½	4½	5	5½	5¾	6¼	6½	7¼	7¾	8	8½	9 in.
Each,	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.95	1.10	1.25

All sizes larger than No. 16, 6 cts. per number, running up to No. 300.

Each number represents a capacity of about 3 pounds of molten metal.



- 6076. **Covers for same.** Nos. 0 to 5, 10 cts. each. Nos. 6 to 10, 15 cts. each. Nos. 12 to 16, 18 cts.

All higher numbers 2 cts. per number.

- \* 6077. **Crucibles, of charcoal, imported from Freiberg, dozen..... 20 cts.**  
6078. Ditto, of clay, for assaying, unglazed porous. Dozen.....20 cts.  
\* 6079. Ditto, of porcelain, with flanged rim, Plattner's. No. 1....25 cts. No. 2....20 cts.  
\* 6080. Ditto, ditto, of porcelain, Rose's, with perforated cover and tube, ¼ oz.....75 cts.  
" " " " " " " " " 1 oz.....\$1 00  
" " " " " " " " " 2 oz.....1 50  
6081. Separate tube with perforated cover.....00 cts.  
Ditto, large.....\$1 00  
\* 6082. Ditto, ditto, of porcelain, with flat bottom.....20 cts.  
○ 6083. Ditto, ditto, copper assay, Battersca, Cornish shape and quality.

	Height,	Diameter,	Price per 100,
Nest of 2,	{ 3¾ in. 2¾ in.	{ 3½ in. 2½ in.	\$8.60
Single,	2½ in.	2½ in.	3.25

## ○\* 6084. Crucibles, Colorado or lead assay; Battersea hard.

No.	Height.	Diameter.	Capacity.	Doz.	Price per 100.
AA.	2½ in.	2½ in.	5 grammes.	.25	\$2.75
A.	3½ in.	2½ in.	10 "	.30	2.75
B.	3½ in.	3 in.	20 "	.35	3.60

## \* 6085. Ditto, ditto, French clay, or Beaufay.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18
Height.	2½	2½	2½	3½	3½	4	4½	4½	5½	6	7	7½	7½	8½	10	11½ in.
Diameter.	1½	1½	1½	1½	2	2½	2½	2½	3	3½	3½	3½	4	4½	5½	5½ in.
Price per doz.	.40	.50	.70	.80	.90	1.00	1.15	1.30	1.50	2.00	2.75	3.50	4.75	5.30	6.50	9.00.
Covers, pr doz.	.25	.28	.30	.33	.35	.40	.45	.50	.65	.75	.85	1.00	1.15	1.25	1.50	1.75.

## ○\* 6086. Ditto, ditto, gold assay, or annealing cups, Battersea.

No.	A.	B.	C.	D.
Diameter,	1½	1½	1½	1½ in.
Height,	1½	1½	1½	2 in.
Price doz.	1.05	1.05	1.05	1.05.
Covers, per doz.	.30	.30	.30	.30.

## \* 6087. Ditto, ditto, French, see Annealing Cups. Each. 15 cts. Dozen, \$1.35.

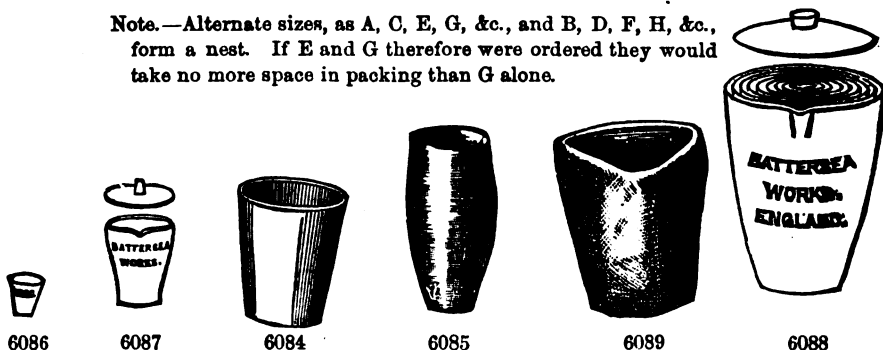
## ○\* 6088. Crucibles, Battersea, round form. This is the assayer's crucible, as it is of the best material and of the best shape, answering for almost all operations better than any other made.

No.	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R
Height.	2½	3	3½	4	4½	5	5½	5½	6½	7½	8	8½	9½	10	11	12	13 in
Diameter.	1½	1½	2½	2½	2½	3	3½	3½	4½	4½	5½	5½	6½	7	7½	8½	9½ "
Price pr doz.	.30	.35	.40	.45	.70	.80	1.10	1.20	1.65	1.75	3.00	3.50	4.90	7.25	8.00	9.15	12.00
Covers, "	.30	.30	.30	.35	.45	.55	.70	.80	.85	1.10	1.20	1.35	1.60	1.90	2.10	2.25	2.70

Original casks per hundred.

○ A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R
1.85	2.25	3.25	3.60	5.75	6.25	8.60	9.00	13.00	13.50	24.00	28.00	39.00	58.00	64.00	73.00	100.00

Note.—Alternate sizes, as A, C, E, G, &c., and B, D, F, H, &c., form a nest. If E and G therefore were ordered they would take no more space in packing than G alone.



## \* 6089. Ditto, ditto, sand or Hessian, triangular form.

	Threes.	Small 5s.	Centimeters.	Large 5s.	Triangle 6s.	Triangle 8s.
No. in nest,	3,	3	3	5	6	7
Height of largest,	3	4	4½	4½	5½	6½
Width on top,	2½	3	3½	3½	4½	6
Price per nest,	.05	.06	.08	.10	.15	.25

## — 6090. Round form.

	Small 5s	Large 5s.	6s.	8s.	Half-size.	Large size.
No. in nest,	2	3	4	5	4	5
Height of largest,	4	4½	5½	7	8½	10½ in.
Width on top,	3	3½	4½	5½	6	7½ "
Price per nest,	.04	.08	.17	.28	.45	.75 cts.

## Extra large size.

No. in nest,	6
Height of largest,	12½
Width on top,	9
Price per nest,	\$1.50

## Double extra large size.

No. in nest,	6
Height of largest,	14 in.
Width on top,	10½ "
Price per nest,	3.50

— 6091. Crucibles, round form, Hessian sand, shape and size like 6088.

No.	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P
Per doz.	\$0.18	.24	.35	.40	.60	.65	.95	1.00	1.45	1.55	2.50	3.20	4.00	6.70	7.40

No.	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P
Per 100	\$1.65	1.85	2.75	3.00	4.95	5.40	7.25	7.90	11.20	12.00	20.00	25.00	33.00	50.50	55.50

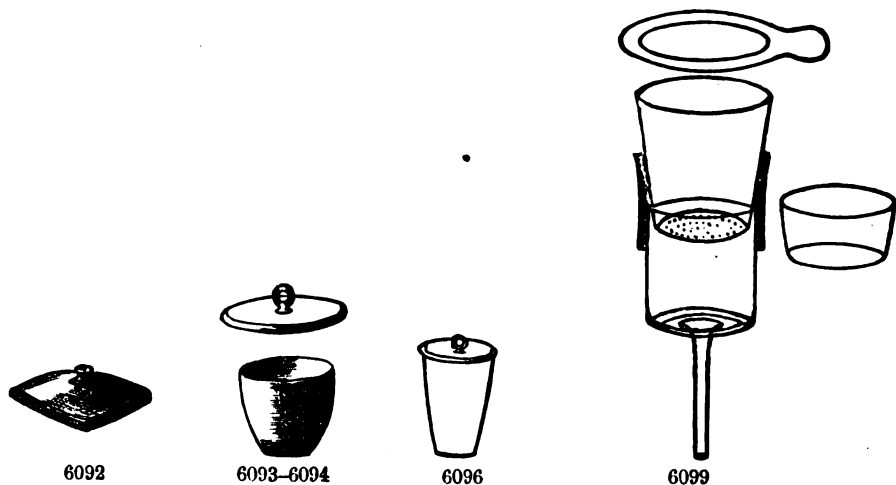
In Original Casks.

— \* 6092. Covers, for Hessian sand crucibles.

Diameter,	2½	3	3½	4	4½	5	5½	6	6½	7	8	9 in.
Each,	.03	.03	.04	.05	.06	.07	.08	.10	.10	.12	.13	.15 cts.

\* 6093. Crucibles, of Royal Meissen porcelain, with covers, glazed throughout.

No.	1	2	3	4	5	6	7	8	9	10.	
Diameter,	80	70	65	55	45	40	35	30	23		millimeters.
Capacity,	6	4½	3½	2	1½	1	½	¼	¼	1-16	oz.
Each,	.60	.45	.35	.26	.22	.20	.17	.16	.15	.12	cts.



\* 6094. Ditto, of best Royal Berlin China, with covers, glazed throughout, the best crucibles made.

	000	00	0	1	2	3	4	5
Contents,	5	13	14	25	45	90	1.50	265 grammes.
	1	1½	1½	1½	2	2½	3	3½ inches.
	12	18	25	30	40	50	60	70 cts.

6095. Crucibles of Royal Berlin, cylindrical form, 15 cc, 25 cts. 40 cc, 35 cts.

With flat bottom and cover, similar, but taller than number 6082.

\* 6096. Ditto, ditto, unglazed porcelain, with lip and cover.

	½	1	2 pints.
	.50	.70	\$1.25

6097. Ditto, of copper, with cover, for regenerating copper oxyde, etc. Shape same as No. 6094.

Capacity,	50	100	250 cc.
	.60	.80	\$1.20

6098. Ditto, of platinum, with cover.

See also Platinum.

— \* 6099. Ditto, platinum, with perforated bottoms, for carbon determination, s c. Gooch's platin. filters, according to weight of platin. and size.

6099a. Ditto, made of Porcelain, capacity 1 oz, each 50 cts. Platina disc, 75 cts. extra. Other crucibles of Platinum, see Platin.

6099b. Gooch's crucibles of solid nickel, \$1.75.

**6100. Crucibles, of pure silver, same shape as No. 6094.**

Sizes on hand,

Capacity, 20 CC. 30 CC. 50 CC. 75 CC. 100 CC. 150 CC. 200 CC.

Price per ounce ..... **\$3 00****6100a. Ditto, of pure wrought nickel.** These are very practical for use in Alkali solutions where there is danger of ruining a platina crucible.

Diameter, 1½, 1¾, 2, 2½, 3¼, 4 inches.

Capacity, 20, 30, 75, 100, 250, 450 CC.

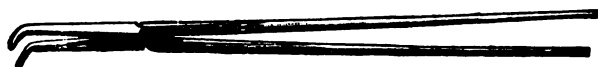
Price, \$ .60 .80 1.00 1.20 1.75 2.25

**6101. Ditto, of cast iron, with cover.**

½	½	1	2 pints.	½	1 gallon.
.75	\$1 00	1 50	2 00	3 00	4 50

\* **6102. Ditto, ditto, with clamp, 50 per cent. higher, see also Retorts.****6103. Ditto, very heavy, of wrought iron, for Belgian lead assay, each... \$2 50-3 00****6104. Ditto, of light wrought iron, with cover same shape as figure 6094.**

No.	Height.	Diameter.	Price.
1 ½ oz.	1 in.	1½	.40 cts.
2 1 "	1½ "	2½	.50 "
3 2 "	2 "	2½	.70 "
4 4 "	2½ "	3½	\$1.00
5 8 "			1.50



6118



6108



6102



6111



6107



6117

**6105. Crucible Tongs, of aluminum, length, 8 in., double bent ..... \$1 00**\* **6107. Ditto, ditto, steel nickel plated, single bent, very light. length, 9 in. 1 00**\* **6108. Ditto, ditto, " " " double bent, " " " 9 " 1 00****6109. Ditto, ditto, " " " single bent..... " 10 " 1 25****6110. Ditto, ditto, " " " double bent..... " 10 " 1 25**\* **6111. Ditto, ditto, brass, single bent, nickel plated..... " 6 " .50****6112. Ditto, ditto, iron, single bent, japanned..... " 10 " .50****6113. Ditto, ditto, " double bent..... " 10 " .50****6114. Ditto, ditto, of brass, double bent..... " 7 " 1 00****6115. Ditto, ditto, of German silver..... 1 50****6116. Ditto, ditto, of pure wrought nickel, (Platina shoes, \$6 00 extra) .. 3 00**—\* **6117. Ditto, of steel, double or single bent, with heavy platinum shoes, nickel plated. Length, 8 in. (Tong German silver, \$7 50).....\$7 00**\* **6118. Ditto, ditto, of wrought iron, single bent, for heavy crucibles. Length 15 in. .90****6119. Ditto, ditto, of wrought iron, single bent, for heavy crucibles.**  
Length. 20 in, \$1 00. 25 in., 1 25. 30 in., 1 50

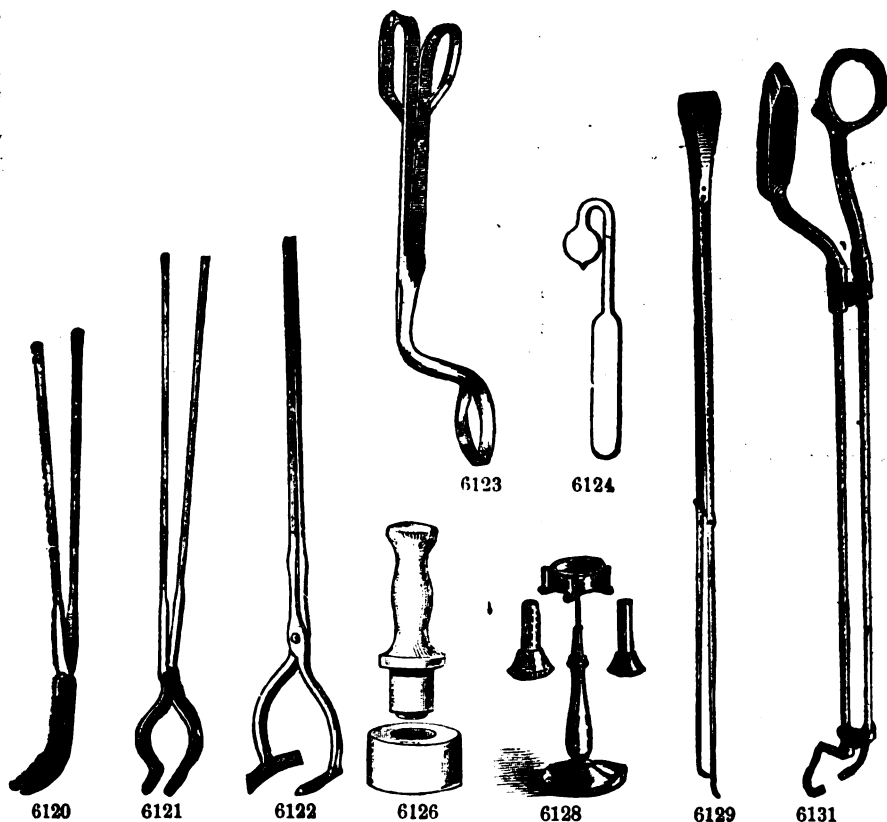
- \* 6120. Crucible tongs of wrought iron, single bent, for heavy crucibles. Length 27 in 1 50  
 \* 6121. Ditto, ditto, double bent ..... 1 75  
 \* 6122. Ditto, ditto, double bent for lifting crucibles vertically ..... 2 00  
 \* 6123. Ditto, ditto, " " with elbow ..... 2 50  
 \* 6124. Cryophorus ..... small, 1 00, medium, 1 35, large, \$1 75

Crystal Strainers, of porcelain, see Strainers.

- 6125. Cupels, of best washed bone ash, Torrey & Eaton's superior make, securely packed.

No.	3	4	5	6	7	8	9	11
Diameter on top,	1	1½	1¾	1¾	1½	1½	1¾	2 inches.
To absorb about	10	15	20	25	30	45	50	75 grammes.
Price per 100	2.00	2.50	3.00	3.50	4.00	4.50	5.00	6.00

Cupel Furnaces, (see Furnaces.)



- \* 6126. Cupel Moulds, steel, improved patterns, best shape, like figure or without rim.
- |           |        |      |      |         |
|-----------|--------|------|------|---------|
| Diameter, | 1      | 1½   | 1¾   | 2 inch. |
|           | \$2 00 | 2 00 | 2 50 | 3 00    |

- \* 6127. Ditto, brass, finely finished styles same as above.

	1	1½	1¾	1¾	2 inches.
	\$2 25	2 50	2 75	3 00	3 75

- \* 6128. Ditto, after Plattner, with stamp and stand, for blow-pipe analysis ..... \$1 45  
 \* 6129. Cupel, Tongs, steel spring; light weight; with guide ..... 1 25  
 6130. Ditto, ditto, broad steel, and rounded ends ..... 1 00  
 ○\* 6131. Ditto, Judson's, of steel ..... 2 00

Cups, annealing, see Annealing Cups and Casserles.

6132. Ditto, of porous clay, for galvanic batteries, (see Porous Cups).....15 to 75 cts.

\* 6133. Cups, Miners, of agateware.

5	6 in. diameter.
.40	.55 cts.

\* 6134. Cylinders, glass-footed, of best German make, with ring around the neck.  
Diameter from 1 to 2 inches.

Height, 4x1	5x1	5x1½	5x2	6x1	6x1½	6x2	7x1½	8	10	12x1½	12x2	15	16	18	20 in.
.15	.16	.20	.22	.25	.25	.28	.25	.30	.35	.40	.45	.50	.60	.70	.80 cts.

If extra wide, 5 to 10 cts. higher.

If ordered with ground top, we ask 10 cents extra for grinding.

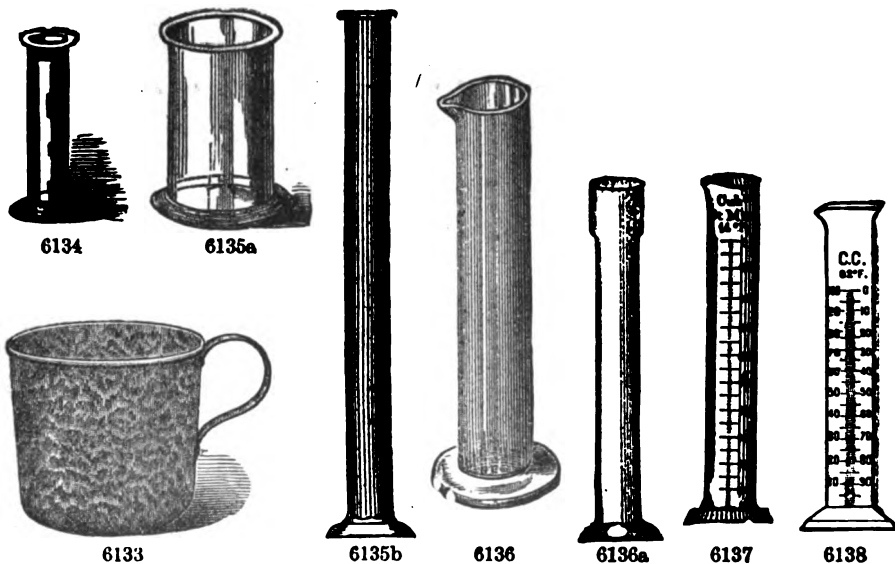
\*\* 6135. Ditto, ditto, tall, straight, ring roughed for glass plates, used for observing colors of gases, etc., a and b.

10x3	8x4	10x4	12x4	18x2½	18x3	20x2½	20x3	25x3	12x3	15x3	30x3	20x4	30x4	36x4 in.
.70	.80	\$1 00	1 25	1 25	1 50	1 75	2 00	2 50	.80	1 00	3 50	2 50	4 50	6 00

\* 6136. Ditto, on glass foot with lip,

Height, 5x1	6x1½	7x1½	8x1½	9x1½	10x1½	12x1½	12x2	15x1½	15x3	18x1½	20x1½ in.
.16	.20	.25	.30	.30	.35	.40	.45	.50	.85	.70	.80 cts.

If extra wide, 5 to 10 cents higher.



\* 6136a. Cylinders, with enlarged top, for Hydrometers and Mercury cistern.

Height,	14	18	12	18 in.
Width on bottom,	1½	2½	2	2½ in.
Width on top,	2	3	3	3 in.
Price,	.40	1.00	.50	.75

\* 6137. Cylinders, on glass foot, with lip, graduated most exact in cubic centimeters; best German make.

Contents, 5	10	15	25	50	100	200	250	300	500	1000	2000	4000 CC.
.25	.28	.32	.35	.45	.65	.80	.90	.95	1 10	2 10	3 25	5 25

\* 6138. Ditto, Graduated, German. Double graduation, so that the divisions can be read up or down.

Contents, 5	10	25	50	75	100	200	250	300	500	1000	2000	4000 CC.
.28	.35	.45	.55	.65	.70	.90	1 00	1 10	1 25	2 50	3 50	6 00

6139a. Cylinders, for acid chambers, with side tube, so-called dripping-glasses,

5 in. 55c.	6 in. 55c.	7 in. 60c.	10 in. 75c.	12 in. \$1.00.
------------	------------	------------	-------------	----------------

\* 6139. Cylinders, on glass foot, with well ground stoppers, graduated most accurately into cubic centimeters, as above.

Contents,	10	25	50	100	200	250	300	500	1000 CC.
	.35	.55	.60	.80	1 05	1 20	1 30	1 60	2 50

6140. Ditto, graduated and stoppered, German. Double graduation, so that the divisions may be read up or down.

Contents,	50	100	200	250	300	500	1000	2000	4000 CC.
	.70	.90	1 15	1 30	1 40	1 75	2 75	4 25	6 50

6141. Ditto, on glass foot, with lip.

	100	500	1000.	5000 grains.
	.35	.50	.75	\$1.10

— 6142. Ditto, in ounces and fractions.

1	2	4	8	16	32 ounces.
.50	.70	\$1 00	1 50	2 00	3 00

6143. Ditto, graduated in cubic inches to order. 10 cubic inches, \$1 25.

\* 6144. Ditto, for Nessler's ammonia test, made of clear glass, with polished bottoms. Graduated 50 CC., 50 cts., 100 CC., 60 cts., in 50 and 100 CC., 75 cts., 50, 100 and 150 CC., \$1 00 each, selected in sets of 2, 3, 4, 6, and 12 to agree.

6144a. Ditto, narrow long form, Board of Health, size, 50 CC., 50 cts.



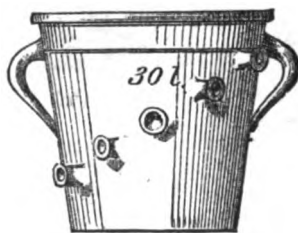
6139



6144



6147



6146



6148

○\* 6146. Decanting Jars, of acid proof stone ware.

Capacity,	2½	5	7½	10 gallons.
Price,	\$1 25	2 20	3 25	4 35 each.

\* 6147. Decanting Jars, of porcelain, with tubulatures and knobbed handles, for washing precipitates, etc.

Contents,	8	12	20	25 lbs.
	\$3 50	4 00	6 00	7 25

\* 6148. Decomposition Apparatus, (see Apparatus, Hofmann's, for water decomposition.

**Deflagration Globes, of glass.**

Diameter,	9	12	15 inches.
	\$1 20	1 60	2 00

If ordered with stand and cup, 75 cts. extra.

**Deflagration Spoons, (see Combustion Spoons.)**

## DESICCATORS.

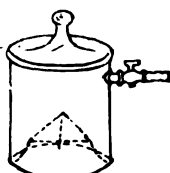
- \* 6149. **Desiccating Apparatus**, acid dish on glass plate, ground air-tight to a bell jar. Diameter of acid dish, 4 4½ 5½ 6 inches.  
 Bell jar diameter, 7 8 9 10 "  
 Glass plate, 8 9 10 12 " square.  
 \$2 50 3 00 3 50 4 00
- \* 6150. Ditto, ditto, small, of Bohemian glass, to weigh hygroscopic substances, protected from moisture ..... \$1 50
- \* 6151. **Desiccators of glass, usual form**, but of entirely superior make, very substantial, plate ground air-tight, diameter inside, 4 inch. Each ..... 60 cts.
6152. Ditto, ditto, Scheibler's, of similar shape as the preceding, but with broad, finely-ground rim at the top, about 6 inches diameter inside and provided with a porcelain support to receive one or more crucibles, etc. Price, complete .... \$2 50
- 6152a. Ditto, without porcelain support ..... 1 25



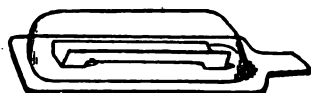
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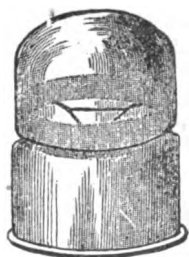
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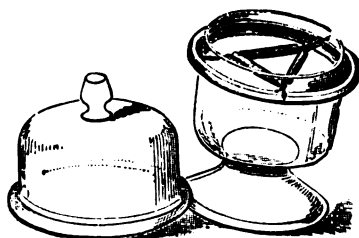
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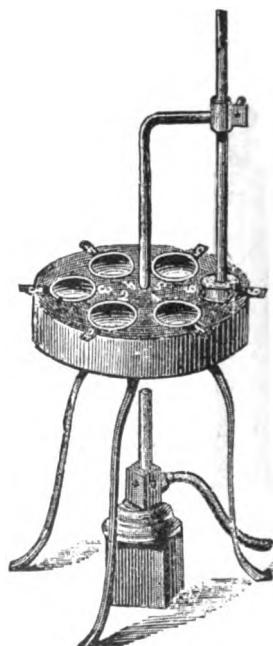
6149



6154



6155



6157

- \* 6153. Ditto, ditto, ditto, with flat top, Bohemian glass ..... 1 60
- \* 6154. Ditto, ditto, ditto, two jars ground together, with round top .... 1 60
- \* 6155. Ditto, Professor Atwater's. A very excellent style. .... Bohemian, 1 80
- \* 6156. Ditto, new style, with glass plate, tripod, side neck and glass stop-cock (or brass stop cock) for exhausting with air pump ..... \$3 00
- \* 6157. **Desiccating Disc, Fresenius'**, a circular iron plate, 8 inches in diameter and 1½ inches in thickness. The plate has six smooth cylindrical cavities, 2½ inches in diameter around the margin. These cavities are fitted with brass pans provided with handles. A central rod affords support to the thermometer. Very useful for agricultural and technical analysis. Without gas burner ..... \$10 00
- Desiccating Ovens**, (see Drying Ovens.)
- Other desiccators, see Drying Apparatus,



\* 6160. Desiccating Tubes, Schrötter's..... 1 25

Desiccating Tubes, see Chloride Calcium Tubes, Drying Apparatus, and Drying Tubes.

Desiccating Pans, see Acid Dishes.

\* 6161. Dialyser, with jar, low or high shape, a or b.

Capacity of outside jar about,	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	3 gals.
	\$1 25	1 50	2 50	3 50	5 00

6161c. Diamonds, in ebony handles for writing on glass.....No. 1, \$2 40; No. 2, 3 20

\* 6162. Ditto, in ebony and metal handle, for cutting glass.....No. 2, 6 50; No. 3, 8 00

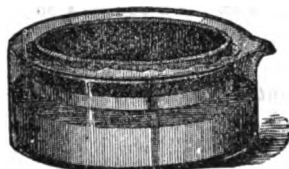
6163. Diamonds, raw or splinters.....1 00 to 5 00



6162



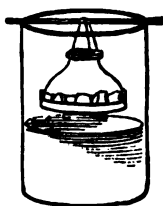
6160



6161a



6166



6161b



6164



6168



6169

\* 6164. Diamond Mortars, of steel, Plattner's usual form, of superior make, pestle made of three kinds of steel, each.....\$3 60

6165. Ditto, ditto, large size, giving excellent satisfaction, each..... 5 50

\* 6168. Ditto, ditto, Leeds form, mortar and anvil combined..... 2 00  
Digesting bottles, see bottles, compressing.

6167. Digesting flasks, Kjeldahls, of hard glass, pear shape.

Capacity,	200	500	750	1000 CC.
	.40	.60	.75	.85 each.

\* 6168. Digestion Flasks, for bacterioscopic investigation of Bohemian glass.

Capacity,	300 CC.	500 CC.
	.30	.40 each.

\* 6169. Dippers, of agate ware, with wood handle.

$4\frac{1}{2}$	$5\frac{1}{2}$	6	$6\frac{3}{4}$ in.
.45	.55	.60	.75

## DISHES.

All our Dishes are the first selection only, a second quality is not kept in stock.

\* 6170. Dishes, crystalizing, single, of best Bohemian glass, straight walls, flat bottoms

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Diameter,	2½	2¾	3	3½	4	4½	5	5½	6½	7½	8½	9½	10½	16	18 in.
Price,	.12	.15	.18	.20	.25	.30	.35	.40	.45	.55	.60	\$1 00	1 75	4 50	8 00

6171. Ditto, ditto, per nest of 6—2 to 8.....\$1 50

“ “ 9—1 to 9.....1 75

“ “ 3—10 to 12.....2 10

\* 6172. Ditto, ditto, of porcelain, glazed inside, flat bottoms and straight walls, with lip.

Diameter,	6½	8½	10	12½	14	16 in.
Each,	.60	.75	\$1 20	2 00	3 00	4 00

\* 6173. Dishes, evaporating, of best Royal Meissen Porcelain, flat bottom. (Trade Mark, crossed swords in blue).

No.	000	00	0	1	2	3	4	5
Diameter,	18	15	13½	12	11	10	9	8 in.
Contents,	2½	1½	1½	1	½ gal.	3	2	1½ pta.
Each,	\$6 00	5 25	3 50	2 50	1 85	1 55	1 30	1 00

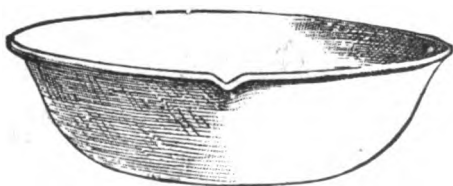
No.	6	7	8	9	10	11
Diameter,	6½	5½	5	4½	3½	2½ in.
Contents,	1	½ pinta.	6	4	2	1 oz.
Each,	.70	.50	.35	.30	.20	.15 cts



6170



6172



6173-6174



6175

\* 6174. Ditto, ditto, of best Royal Berlin China, glazed inside and outside, with lip. No. 000-5 round bottom, larger sizes, flat bottom. The best dish made. (Trade Mark, blue sceptre).

No.	000	00	0	1	2	3	4	5	6	7
Diameter,	1	2½	3	3½	3½	3½	4½	4½	6	7 in.
Contents,	½	1½	2	3	4	6	8	10	14	24 oz.
	.10	.18	.20	.30	.32	.35	.45	.55	.70	.85 cts.

No.	8	9	10	11	12
Diameter,	8½	10½	12½	14	16½ in.
Contents,	3 pta.	½ gal.	7 pta.	1½	2 gal.
	\$1 20	1 75	2 75	3 50	8 00

\* 6175. Dishes, evaporating, best German porcelain, glazed inside, with heavy ring, deep form.

No.	000	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Diameter,	24	18	14	12	11	10	9	8	7	6½	6	5½	5	4½	4	3½	3	2½ in.
Contents,	6	3	2	1 gals.	3	2	1½	1 qt.	24	20	16	12	8	6	5	4	3	2 oz.
	\$10.00	4 00	3 00	2 00	1 60	1 30	.90	.80	.70	.55	.45	.40	.35	.30	.25	.22	.20	.15

Net.

## \* 6176. Dishes of porcelain, shallow form.

No.	00000	0000	000	00	0	1	2	3	4	5
Diameter,	2	2½	3	3½	4½	5½	6½	7½	9	10½ in.
Capacity,	½	1½	2	3	4	7	17	27	42	54 oz.
Price,	.12	.15	.20	.25	.30	.35	.45	.55	.70	.85 cts.

No.	6	7	8	9	10	11	12
Diameter,	11½	12½	12¾	13½	14½	16	18 in.
Capacity,	68	84	114	146	178	234	340 oz.
Price,	\$1 00	1 15	1 40	1 80	2 25	3 00	4 00

Dishes, of porcelain, nested, deep form.

\* 6178. Ditto, ditto, in nests, 9, from 2 oz. to 20 oz. .... \$2 50

6179. Ditto, ditto, " 6, from 2 oz. to 8 oz. .... 1 50

6180. Ditto, ditto, shallow, in nests of 6. .... 1 10

## \* 6181. Ditto, evaporating, of acid proof stone-ware. German make.

Inside diameter,	8	9	10	11	12	15	16	18	20 in.
Capacity,	½	¾	1	1½	2	3	4½	6	gals.
Price,	.30	.45	.60	.80	.95	\$1 35	1 85	2 50	3 50 each.

Inside diameter,	22	25	28	32	36	40 in.
Capacity,	8	11	16	19	25	40 gal.
Price,	\$4 70	5 50	7 50	9 25	13 50	20 00 each.



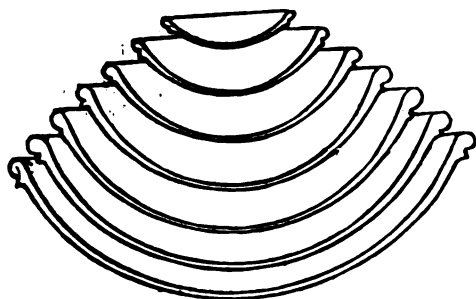
6183



6184



6186



6181



6178



6182

## \* 6182. Ditto, ditto, of iron, porcelain lined, so-called agate ware.

No.	1	2	3	4	5	6	7	8	9	10
Diameter,	5	8	9	12	16	18	20	22	24	26 in.
Contents,	½	1	1½	2	3	4	5	6	7	gal.
Price,	.75	1 00	1 50	2 00	3 00	4 00	6 00	12 00	15 00	18 00

6182a. Ditto, White enameled deep shape, like 6175, acid proof, very superior make.

No.	8	7	6	5	4	3	2	1	0	00
Diameter,	5	6½	7½	8½	9	10	11	12	13	15 in.
Capacity,	16	20	24 oz.	3 pt.	½ gall.	3 qt.	1	2	3	gal.
Price,	.55	.65	.75	.90	1 00	1 30	1 75	2 10	3 50	5 00

\* 6183. Ditto, ditto, shallow, with pointed lips; small dishes; 4 in next, for microscopic work, etc. .... \$1 00

\* 6184. Ditto, ditto, with straight walls and lips, per nest of 4. .... 1 00

6185. Ditto, ditto, per nest of 7. .... 1 60

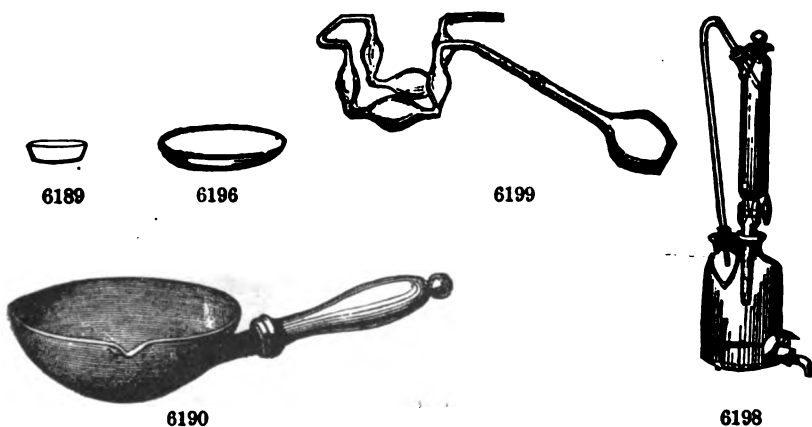
\* 6186. Dishes, evaporating, of glass, with lip, best Bohemian, in nests of 6.  
No. 1 to 6. .... \$1 10. Nests of 9, No. 1 to 9. .... \$1 80

6187. Ditto, ditto, nest of 3, the 3 medium sizes, Nos. 4, 5 and 6. .... .85

6188. Ditto, single, No.	0	1	2	3	4	5	6	7	8	9
Diameter,	1½	2½	3½	3¾	4½	5½	5¾	6	6½	7 in.
Price.	.15	.18	.20	.25	.30	.35	.40	.45	.50	.60

- \* 6189. Dishes, porcelain, set of 3 for blow-piping, Meissen porcelain, per set..... 25 cts.
- \* 6190. Ditto, for evaporating, of porcelain, with wooden handle,  $\frac{1}{2}$  pint, pint, quart  
.65 .80 1 65
6191. Ditto, of very thin glass, for fat analysis, (Hofmeister's Schälchen) to be crushed with contents in the mortar. Dosen..... \$1 25
6192. Dishes, evaporating, of pure wrought nickel, with lip.
- |             |                 |     |                 |                 |                 |                 |      |                 |                 |
|-------------|-----------------|-----|-----------------|-----------------|-----------------|-----------------|------|-----------------|-----------------|
|             | 4               | 5   | 6               | 7               | 8               | 9               | 10   | 12              | 15 centimeters. |
| Diameter, { | 1 $\frac{1}{2}$ | 2   | 2 $\frac{1}{2}$ | 2 $\frac{3}{4}$ | 3 $\frac{1}{4}$ | 3 $\frac{1}{2}$ | 4    | 4 $\frac{1}{2}$ | 6 inches.       |
| Price,      | .45             | .55 | .70             | .90             | 1.00            | 1.25            | 1.40 | 2.00            | 2.40            |
- 6193. Ditto, evaporating, of platinum, with lip, best Paris make, according to weight. For shape and size, (see Platinum.)
6194. Ditto, ditto, of pure silver, according to weight, on hand are, 1 $\frac{1}{2}$ , 2, 2 $\frac{1}{2}$ , 3, 3 $\frac{1}{2}$ , 4, 5, 6 in., per oz.,..... \$3 00

Same shape as those made of platinum.



6195. Ditto, of German silver, for sugar analysis.
- a, small, without lip, in sets of 3, with tare weight ..... \$3 00
- b, large dish, with large lip and tare..... 3 00
- \* 6196. Ditto, made of lead, for etching on glass, with hydrofluoric acid.
- |           |     |                 |     |     |     |          |
|-----------|-----|-----------------|-----|-----|-----|----------|
| Diameter, | 2   | 2 $\frac{1}{2}$ | 3   | 4   | 5   | 6 in.    |
|           | .12 | .15             | .20 | .25 | .30 | .35 cts. |
6197. Ditto, for roasting, (see roasting Dishes.)
- \* 6198. Displacement Apparatus, Guibourg's, a funnel with glass stop-cock fitting into a separatory bottle, with ground glass stop-cock at the bottom.
- |                                   |         |          |                    |        |
|-----------------------------------|---------|----------|--------------------|--------|
|                                   | 1 pint, | 1 quart, | $\frac{1}{2}$ gal. | 1 gal. |
|                                   | \$3 75  | 4 75     | 5 50               | 7 50   |
| 6198a. The upper glass part alone | 1 75    | 2 25     | 2 50               | 3 00   |

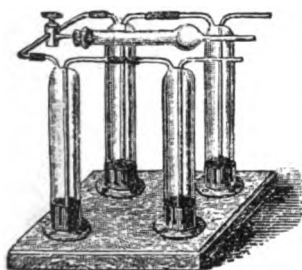
Distilling Flasks, (see Flasks for Fractional Distillation. Other Distilling Apparatus, (set Apparatus.)

- \* 6199. Distilling Apparatus, according to Thorn..... \$3 00 each.
6200. Distilling Vessels, of heavy copper, with tubulated cover, fastened with screw clamps, easy accessible for cleaning out. Capacity, 2 5 quarts,  
\$15 00 20 00 each.

If brazed for tar distillation, \$5 00 additional.

- \* 6201. **Doebereiner's Hydrogen Lamp**, very neat, glass jar, with brass-top, platina sponge included, each.....\$3 50
6202. Ditto, in fancy jar..... 5 00      Extra Zincs,..... 25 cts.
- \* 6203. **Droppers**, of glass, with rubber bulb.....Each, 5 cts.    Doz. 40 cts.
- \* 6204. **Dropping Glass**, Shuster's, best make, stoppered, each..... 25 cts.
6205. Ditto, ditto, without stopper..... 20 cts.  
Other Dropping Bottles (see Acid Bottles and Pipettes.)
- \* 6206. **Dropping Flask**, Sallerones, very practical..... 25 c's
- Dripping Glasses**, for sugar tests, see Cylinders, 5x2 in. or 6x2 in.
- \* 6207. **Dropping Glasses**, according to Ranvier, with ground in pipette.
- |           |               |     |                 |
|-----------|---------------|-----|-----------------|
| Capacity, | $\frac{1}{2}$ | 1   | 2 oz.           |
| Price,    | .30           | .35 | .40 cents each. |

See also No. 8655.



6210



6204



6206



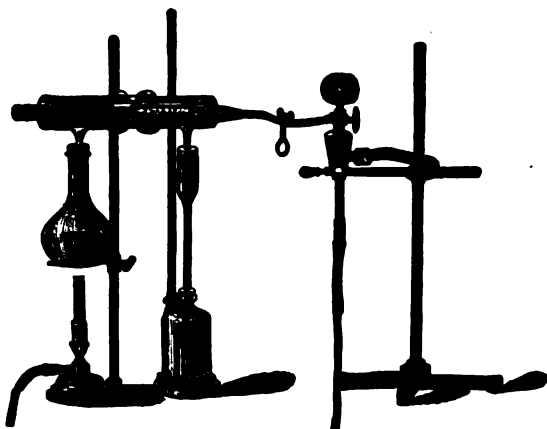
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6201



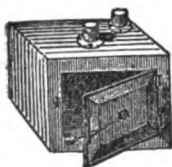
6203



6208

- \* 6208. **Drying Apparatus**, according to Habermann and Zulkowsky, for primary desiccation of substances for organic analysis in vacuum, by aid of a water air-pump and a water—, amyl. alcohol—, or an aniline vapor-bath (Fresen. Zeitschr. 1881, p. 265). The glass parts only.....\$2 75
- The support with clamp and ring, vacuum gauge, \$5 00 extra..... 2 75
- Or the complete apparatus with plain filter pump and extra support, etc... 9 50
6209. **Drying Apparatus**, according to Scheibler, for drying and evaporating in vacuum at a constant temperature and with a constant level in the steam boiler (Fresen. Zeitschr. 1879, p. 578.) The complete apparatus with a drying cylinder 14 inch highx4 $\frac{1}{2}$  inch diameter, provided with an etagere inside with 6 perforated shelves, with supports and a water air-pump.....\$88 00
- 6209a. The apparatus without the air-pump and support..... 65 00
- ◊ 6210. **Drying Apparatus**, according to Bennert, as accepted for use at the Bonn laboratory; the whole of glass; the 4 drying jars are fastened to a base board...\$7 50
- ◊ 2611. Ditto, ditto, tubes not fused in, with U Tube in centre and rubber stoppers, on wooden support.....\$7 50

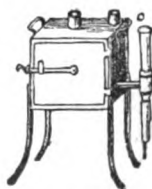
- \* 6211a. Drying Apparatus, according to Liebig and Mitcheerlich, with oil bath, tripod, air-pump, etc., complete .....\$25 00
- \* 6212. Drying, absorbing and washing bottle for liquids and solids, Greiner and Friedrichs, so arranged as to pass and repass gases, etc., through the bottle without changing connections allowing perfect absorption. (see 6512a.)
- |        |      |        |
|--------|------|--------|
| 8      | 16   | 32 oz. |
| \$2 00 | 2 50 | 3 00   |
- \* 6214. Drying Bath, of tin, with double walls, to be filled with water, with two openings for thermometer, etc. Size, 6x8 inches, each .....\$2 50
6215. Ditto, ditto, ditto, of copper, with double walls and two openings for thermometer, etc., made in the most substantial manner.
- |       |        |      |           |
|-------|--------|------|-----------|
| Size, | 6x8    | 8x10 | 10x12 in. |
|       | \$5 50 | 8 00 | 11 00     |



6214



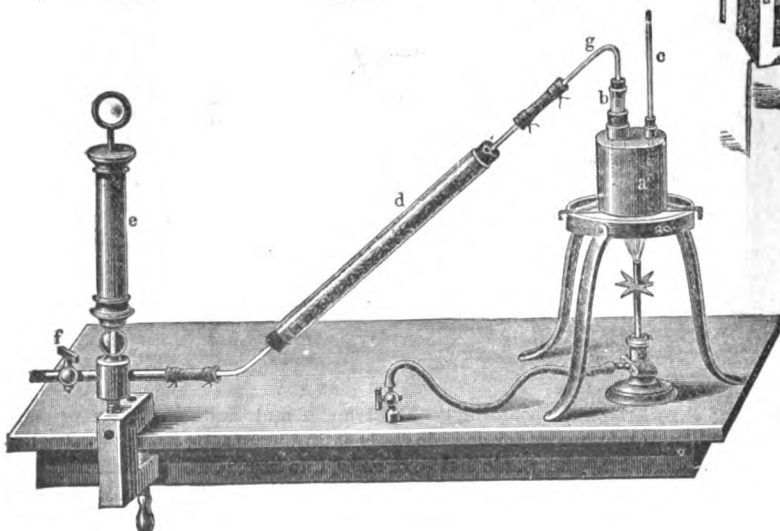
6212



6218



6219



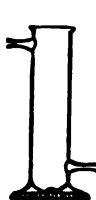
6211a

6216. Ditto, ditto, resting on 4 legs, and with extra iron bottom, which can be taken out. Each..... \$1 00 higher.
6217. Ditto, ditto, with thermometer.....\$1 00 extra.
- \* 6218. Ditto, ditto, new style, with Prof. Kekule's water regulator; otherwise same as above. The whole resting upon four movable feet.
- |       |        |       |           |
|-------|--------|-------|-----------|
| Size, | 6x8    | 8x10  | 10x12 in. |
|       | \$7 00 | 10 00 | 12 50     |
- \* 6219. Ditto, ditto, with regulator and water-bath on top.
- |       |         |       |           |
|-------|---------|-------|-----------|
| Size, | 6x8     | 8x10  | 10x12 in. |
|       | \$10 00 | 12 00 | 15 00     |

6220. Drying Bath, with thermometer.....\$1 00 extra.  
Other Drying Baths, see Water-bath.
- \* 6221. Drying Oven, for larger laboratories, of copper, well-tinned, with 4 chambers and glass windows, steam in and outlet stop-cocks and 5 sets of rings on top for water-bath evaporations, with rings to be fastened against the wall.....\$100 00  
Ditto, if provided with support and legs.....\$25 00 extra.
6222. Above apparatus if made of leadened sheet iron.....20 % less than in copper.  
Larger sizes up to 24 chambers, to order. See also under apparatus for general laboratory work.
6223. Drying Cylinder, after Professor Silliman.....60 cts.
- \* 6224. Ditto, ditto, according to A. H. Elliot.....50 cts.  
Other Drying Jars, see Chloride Calcium Jars.
- \* 6225. Drying Oven, Fresenius', of copper, very substantial, of improved style, a square copper box, with double bottom, one of which is of iron, and can be replaced if burned through, so that the copper box will last forever. The four legs can be taken out and the box heated on a stove.
- | Size, | 6x8    | 8x10 | 10x12 |
|-------|--------|------|-------|
|       | \$4 50 | 6 50 | 9 00  |



6221



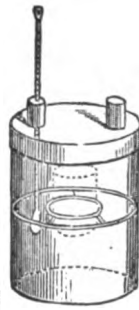
6224



6229



6225



6228

6226. Ditto, ditto, of copper, same as above, with arrangement to hang against the wall; with 3 legs, of which one is stationary, and used as sliding rod for fork and burner.
- | Size, | 6x8    | 8x10 in. |
|-------|--------|----------|
|       | \$7 00 | 9 00     |
- See figure 5021.
6227. Ditto, ditto, School of Mines pattern, of copper, 12x10x10 inches, enclosed in sheet-iron box, with heating coil; the best laboratory hot air drying oven.....\$30 00.
- \* 6228. Ditto, ditto, after Rammelsberg, of heavy copper.....small, \$3 00, large, 4 00  
Extra large, 8x8 inches, 7 50
- \* 6229. Ditto, ditto, double wall, with two shelves, E. & A.'s. Being made without seam and without solder, it is a practical drying oven. Being very heavy in copper and without seams; it may be used as hot-air, water, oil, or paraffin bath equally well. Size, 8x8 inches. Price .....\$9 00

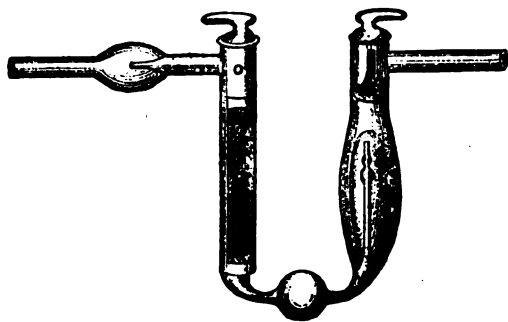
- \* 6230. **Drying Tube**, for gases, according to Winkler, with platina wire, filled with beads.  
Price.....\$1 00
- \* 6231. Ditto, ditto, according to Schmitz, for elementary organic analysis; about 8 inches high.....\$2 25 each.
6232. **Drying Tubes**, according to Babo, filled with glass beads, straight, with 2 bulbs, and 9½ inches long.....\$1 20 each.  
Ditto, ditto, the same, but 20 inches long.....\$2 00 each.
- \* 6233. **Drying or Washing Arrangement**, for gases, see Winkler's Gas Analysis.  
Price, 80 cts. Bottle, tube and stopper, 40 cts. extra.
6234. Ditto, Ditto, with stop-cock.....\$1 75

**Other Drying Tubes**, (see also Chloride Calcium and Desiccating Tubes.)

**Drying Bath Regulator**, Bunsen's, etc., (see Gas Regulator.)



6230



6231



6239



6233

- 6235. **Dynamo Electrical Machines**, Weston's, procured at; a, for light, 28x13 inches, 4,000 candle power or Edison's 3-horse power.....\$300 00  
b, for plating, 10x14 in., ½-horse power.....150 00
- 6236. **Dynamo Electric Machine**; Siemen's, specially constructed for use by educational institutions, is worked by hand power, and answers for all illustrations performed by the lecturer.....\$175 00
- 6237. **Dynamo**, Edison's, mounted on table with 2-12 candle lamps.....100 00
- 6238. Ditto, ditto, smaller, specially intended for physiological purposes.....50 00
- \* 6239. **Edulcorating Apparatus**, according to Berzelius, with support, bottle, tube, funnel and receiver, complete.....\$2 00
6240. The bottle with tube alone.....50 cts.

**Electric Battery**, (see Batteries.)

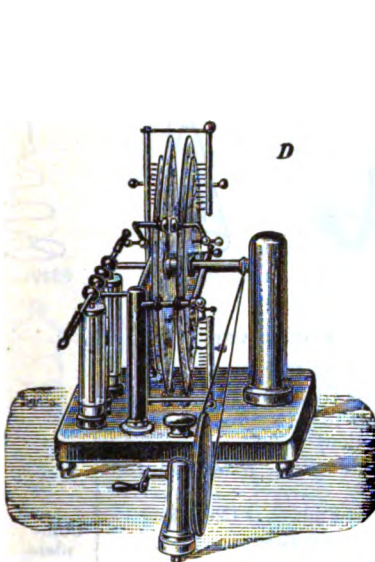
6241. **Elastic Bands**.

1-16 inch wide,	1	1½	1¾	2	2½	3	3½ in length.	5 in.
¼	"	1	1½	1¾	2	2½	3	3½ " 0 "
½	"	0	1½	0	2	2½	3	3½ " 0 "
¾	"	0	0	0	2	2½	3	3½ " 0 "
1	"	0	0	0	2	2½	3	3½ " 5 "

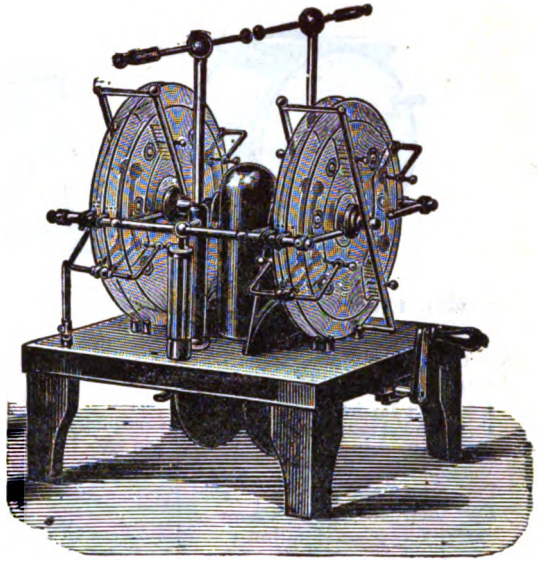
Small rings, ¼ inch bore, oz. 40 cts. Put up in ¼, ½ and 1 pound boxes. \$3 00 per pound.



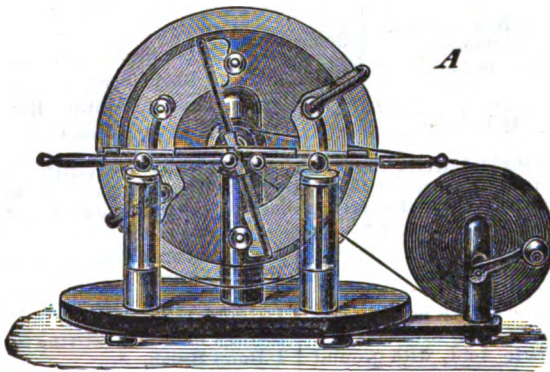
- \* 6242. Electrical Machines, Toepler-Holtz, self-charging, with the latest improvements, giving a spark 5 inches, complete 10½ in. plates. Price plain, \$20 00 ..... Rubber supports, \$25 00
- \* 6243. Ditto, ditto, double machine, two revolving plates 12½ inches, hard rubber fittings. Price ..... \$80 00



6243



6244



6242

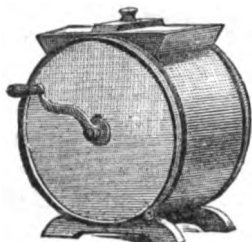
- \* 6244. Electrical Machine, new Toepler-Holtz, with four revolving plates, 36 centimeters = 14½ inches in diameter, mounted on mahogany base, with central mahogany pillar, all elegantly polished. This instrument is of superior workmanship, and the results which can be obtained with it are very fine. .... \$125 00
- Larger sizes imported to order.

**Elutriating Apparatus,** see Displacement Apparatus, and Apparatus for Soil Extraction.

6245. Electrolytic Apparatus, according to A. Classen, as illustrated in his work "Quantitative Analyse, auf electrolyt, Wege," 1882.

- 6246. Platin. Electrodes, per gramme ..... 70 cts.
- 6247. Support, with clamp or ring ..... \$4 00

6248. Electrolytic Apparatus, for the determination of copper, (as described by the Mansfield Mining and Smelting Directory in Fresen. Zeitschr, XI., 1872) per grm. 70c.
- \*\* 6249. Platinum Cone,  $\frac{3}{4}$  in. x  $2\frac{3}{4}$  inch wide at its base, with platin. spiral, weighing altogether from about 50 to 60 grammes, lighter ones, 30 to 40 grms., according to weight. Price, per grm. . . . 70 cts.
- 6250 Support for, ditto, with double clamp. . . . . \$4 00



6255



6256



6249a



6249b

### 6251. Electro Plating Outfits. For Nickel.

#### No. 1. AMATEUR.

- 1 Battery . . . . .  
1 6-Quart Jar for solution . . . . .  
Pure Nickel Salts . . . . .  
" " Anodes . . . . .  
Wire and Connections . . . . .  
Polishing material . . . . .  
Full instructions and a copy of  
Watts' Electro Metallurgy . . . . .

Complete,  
\$20 00

#### No. 2. 20-GALL. OUTFIT.

- 1 Battery . . . . .  
1 Square Wood Tank . . . . .  
3 Anodes, about 70 sq. inches,  
Rods and Connections . . . . .  
20 Galls. Solution, in Carboy or  
Salts . . . . .  
Full instructions and a copy of  
Watts' Electro Metallurgy . . . . .

Complete,  
\$60 00

### For Silver.

- 2 No. 1 Smee Batteries . . . . .  
1 Extra Glass Cup . . . . .  
2 Rods 18 inches long and con-  
nections . . . . .  
2 Conducting Wires, 10 feet  
each . . . . .  
1 Glass Funnel, 1 Glass Rod . . . . .  
 $\frac{1}{2}$  lb. Quicksilver . . . . .  
1 qt. Silver Solution . . . . .  
1 Silver Anode . . . . .  
Graduate Glass . . . . .  
Wire . . . . .  
3 Brushes . . . . .  
3 Burnishers . . . . .  
Pumice, Whiting, Rouge, Crocus  
Book of Instructions . . . . .

Com-  
plete,  
\$30 00

### 6252. Jeweler's Outfit for Gold and Silver Plating. In this set is included all that is necessary for a jeweler or watch repairer to start business with. It comprises all the Batteries, Solutions, Chemicals and Apparatus that are required with instructions, viz :

- 2 Two-quart Smee Batteries,  
2 Two-quart Solution Dishes,  
1 Stand with Pan,  
1 Pint Cyanide Silver, with bottle,  
1 Pound Cyanide Potassa, with bottle,  
1 Test Bottle Nitric Acid, with ground  
stopper,  
 $\frac{1}{2}$  Pound Mercury and bottle,  
1 Ounce Silver Plate and Wire,  
1 Copper Plate and Wire,  
4 Pennyweights Gold Plate and Wire,  
1 Scratch Brush,  
1 Lamp,  
1 Soft Brush for cleaning work,

- 1 Box Ground Pumice Stone,  
1 Box Whiting,  
2 Connecting Cups,  
1 Graduate Glass,  
2 Glass Rods, for Stirring Solution,  
1 Hand Brush,  
1 Burnisher,  
1 Bottle of Crocus,  
2 Pieces of Chamois Leather,  
1 Bottle of Rouge,  
1 Bottle of Gold Solution,  
1 Blow-pipe,  
1 Box and Thermometer,  
1 Two-quart Bottle Silver Solution.

Complete,  
\$45 00

6253. Emery Paper, for cleaning metal parts, etc., per sheet. . . . . 3 cts.

6254. Emery Cloth, sheet. . . . . 6 cts.

\* 6255. Emulsion Machine, for cod liver oil emulsions.

2 $\frac{1}{2}$	4	7	10 $\frac{1}{2}$	15 gal.
\$3 00	3 60	4 25	4 80	5 40

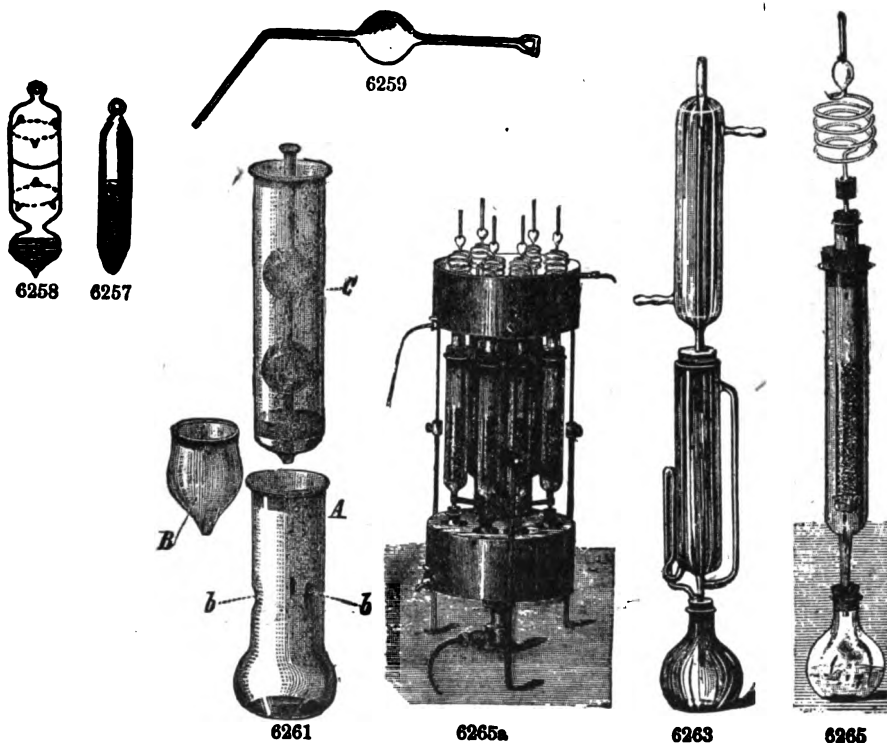
Larger sizes to order.

\* 6256. Erdmann's Furnace, a tripod with clay chimney.

Without burner . . . . . 50 cts.

With burner and triangle, complete. . . . . \$1 00

- \* 6257. Erdmann's Float.....25 cts.  
 \* 6258. Ditto, ditto, new style.....50 cts.  
**Ether Bottle, German. See Bottles, glass stoppered with cap.**  
 \* 6259. Ether Jet or Eolipile,.....25 cts.  
 6260. Ether Pipette, Ettling's. Small.....70 cts. Large.....85 cts.  
 —\* 6261. Extraction Apparatus, Thorn's, for quaintative work, (see Fresenius Zeitschrift für analytische Chemie.)  
     Small.....2 00. Large.....2 75  
 — 6262. Ditto, ditto, Soxhlet's, for milk.  
     Small.....1 20. Medium.....1 50. Large.....2 00  
 \* 6263. Ditto, ditto, Soxhlet's, with flask and condenser.  
     Small.....2 25. Medium.....2 50. Large.....3 50



- 6264. Extraction Apparatus, after Mohr.  
     Small.....75 cts. Medium.....1 00. Large.....1 50  
 —\* 6265. Ditto, ditto, with condensing coil and flask.  
     Small.....1 50. Medium.....2 00. Large.....3 00  
 \* 6265a. Ditto, ditto, 6 in. frame, with water-bath of copper.....45 00  
 — 6266. Ditto, ditto, for ether extractions, etc., a modification of Soxhlet's and Mohr's, complete with condenser and flask Knoefler's form.  
     Small.....2 00. Medium.....2 75. Large.....3 40  
 — 6267. Ditto, Ditto, according to Waller, a modification of Soxhlet's.....1 20  
 — 6267a. Ditto, ditto, with condenser.....1 95

## —\* 6268. Extraction Apparatus, with mercury-sealed joints, after Schwartz.

100	250	500	1000 CC.
2 00	2 50	3 00	3 50

\* 6269. Ditto, ditto, Drexel's, for repercolation.....\$4 50

\* 6270. Ditto, ditto, of tin, according to Mohr, for extractions with Ether.

Capacity,  $\frac{1}{2}$  gallon ..... 7 50

6271. Ditto, Thorn's modification, made in all sizes of copper and tin, to order up to 25 gal. capacity.

\* 6272. Ditto, ditto, E. & A.'s, entirely of glass, for rapid extractions with limited quantities of ether or alcohol. The apparatus is expressly constructed for the analysis of Cinchona Bark, but will answer for any other bark, root, or herb exhaustion. It will do a two days work in two hours. Being provided with a three-way stop-cock, tests can be made without taking it apart. Quart size complete with support.....\$15 00

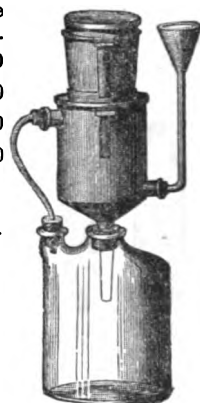
The glass parts alone..... 10 00

Pint size..... 12 00

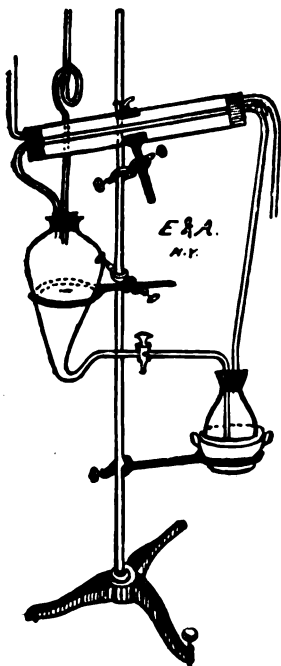
The glass parts alone..... 8 00

See also Displacement Apparatus.

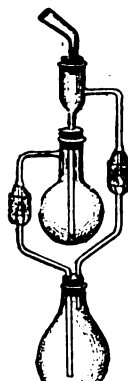
\* 6273. Ditto, ditto, according to Gavalowsky.....\$3 75 each.



6270



6272



6268



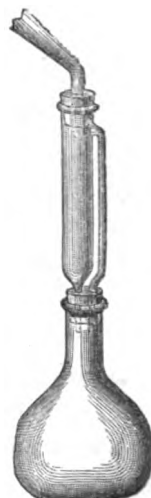
6269



6273



6274



6275

\* 6274. Ditto, ditto, for the determination of fats, according to Kreussler, with inside condenser and with 3 receiving flasks, per set. ....\$3 50

\* 6275. Ditto, ditto, according to Kuehne, with a lateral tube sealed to the displacer, to connect with the receiver.

Small..... 1 50. Large.....\$2 00

6276. Ditto, ditto, according to Scheibler..... 2 50

- \* 6276a. Eudiometer, Bunsen's, with platina wires, 50 CC. in 1-5, 100 CC. in 1-1. \$2 00  
 Ditto, " " " 100 CC. in  $\frac{1}{2}$  ..... 2 50  
 Ditto, " " " 100 CC. in 1-5 ..... 2 75  
 6276b. Ditto, " " " graduated in millimeter.

300	500	700	800
\$2 00	2 50	3 00	3 50

- \* 6276c. Ditto, Mitcherlich's, new style, light, with stop-cock at bottom.  
 50 CC. in 1-5 ..... 3 00      100 CC. in 1-5 ..... \$3 50

The extra heavy form, \$3 00 extra.

- 6276d. Ditto, Ure's, straight, graduated into cubic centimeters or cubic inches. .... \$2 00  
 \* 6277. Ditto, ditto, U shape, " " " " ..... 2 50

Other Eudiometers, see Gas measuring Tubes. Eudiometers, Hofmann's, (see Apparatus, Hofmann's),

Evolution Flasks, (see Flasks.) Exsiccators, (see Desiccators.) Felt Filtering Bags, (see Filters.)

6278. Evaporators, of improved form for the quantitative laboratory, especially the steel laboratory, obviating the corrosive action of escaping steam, boiling quickly without direct contact of flame in sections for six dishes, per section ..... \$25 00

- 6278a. Evaporators, rows of Bunsen's burners mounted each with separate stop, tripod and  $2\frac{1}{2}$  in. sand bath so accurately adjusted that the iron will not bake upon the sides of the beakers, series of 6 ..... \$12 00

Series of 12 ..... 20 00

6280. Figures, steel, for marking bullion.

1-16	$\frac{1}{4}$	3-16	$\frac{1}{2}$	5-16	$\frac{3}{4}$	7-16	$\frac{1}{2}$ inch.
.90	1 00	1 25	1 50	1 75	2 25	2 85	3 60 per set.

6281. Files, round, best, so-called rat-tails, with fine point for perforating corks, etc.

3	4	5	6	7	8 in.
.12	.15	.20	.25	.30	.35 cts.

6282. Ditto, triangular, for cutting glass, best Stubbs.

3	4	5	6	8 in.
.12	.15	.20	.25	.35 cts.



6276a



6276c



6285



6277

6283. File Handles, each ..... from 5 to 10 cts.

Filter Case, see case for Filters.

6284. Filter Pattern. Set of 4—3, 4, 5, 6 inches. .... 15 cts.

Set of 5— $2\frac{1}{2}$ , 3, 4, 5, 6 inches. .... 13 cts.

- \* 6285. Filter Drying Bath, of porcelain, for drying precipitates on the filter. .... \$1 50

## FILTERING PAPER.

We are exclusive Agents for the United States for the celebrated Filter Papers manufactured by Schleicher & Schuell, Dueren, Rh. Pr., so long and favorably known to the trade, and keep the following kinds and sizes constantly on hand. We claim that we have the best Filtering Papers made, and draw special attention to quality and prices.

(a) for Qualitative Work.

We have for years been selling an excellent quality of white E. & A. Filter Paper, in sheets 20x20 in., which is unsurpassed for tenacity, clear, rapid filtering, and cheapness. It is very extensively used for qualitative and pharmaceutical work as well as for general manufacturing purposes and gives best satisfaction. As there are no cheap round filters of uniform and

good quality in the market, we made arrangements to have the above paper put up, ready cut, in packages of 100 filters each, in two grades (white and grey), which we offer as follows:

	Diameter,	7	10	13	15	19	25	33	40	45	50 cm.
	"	3	4	5	6	7½	10	13	16	18	20 in.
*6286. White,	\$0.08	.13	.18	.22	.25	.35	.56	.72	.96	1.10	per 100
*6287. Grey,				.20	.24	.30	.50	.66	.81	.96	filters.
6288. White in sheets, 20x20 inches, per bale of 10 reams											\$45 00
Smooth or emboss.d, \$4.80 per ream ; 30 cts. per quire.											

### Filter Papers, Schleicher & Schuells, Ready cut in round disks.

	Diameter,	7	9	11	12½	15	18½	24	33	38½ cm.
	"	2½	3½	4½	5	6	7½	9½	12½	15 in.
* 6289. No. 595.	.12	.15	.20	.23	.25	.30	.40	.60	\$1 00	1 25
— 6290. No. 597,	.15	.20	.25	.30	.35	.40	.55	.75	1 15	1 50

Price per package of 100 filters.

To fill a long needed want we introduce herewith folded filters of excellent quality —the strength of this paper and the peculiar folding will prevent the constant and annoying tearing of the points. It is entirely free of chlorine, always ready for use, time-saving and not expensive, and put up very conveniently in neat boxes.

### ○ 6291. S. & S., folded filters. No. 588.

Diameter,	12½	18½	24	32	38½	50 ctm.
Inches,	5	7½	9½	12½	15	19½ in.
Price per pack,	.35	.50	.75	\$1 25	1 50	2 25



6286-87



6289

- 6292. The 3 largest sizes of these filters will also be furnished with parchmentized points, so as not to break even under considerable pressure, at an additional expense of 25 %.

### S. & S. In sheets, each bearing Manufacturer's water mark.

- 6293. No. 595. Size 19x21 in., a good light Filter paper. Price per ream... \$10 00
- 6294. No. 597. Size 23x23 in., much heavier than the foregoing for rapid and clear filtrations. Price per ream... 18 00. Quire... \$1 00
- 6295. No. 598. Size 23x23 in., extra heavy. Price per ream... 30 00. Quire... 1 75
- 6296. Filtering Paper, white, French, genuine Prat-Dumas, size, 17x22 in. Ream... \$1 25. Quire... 25 cts.
- 6297. Ditto, ditto, grey. Ream... 3 50. Quire... 20 cts.
- 6298. Ditto, ditto, white, common, so-called bibulous paper. Ream... \$3 00. Quire... 20 cts.

## (b) for Quantitative Work.

6299. Filter paper, genuine Swedish, No. 1. Muunktel's best quality; every sheet selected, giving least ashes of any paper made; size, 19x19 in.

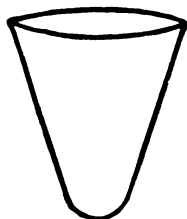
Quire.....1 10, Ream .... \$19 00

6300. Ditto, ditto, genuine Swedish, No. 2, size, 19x19 in.

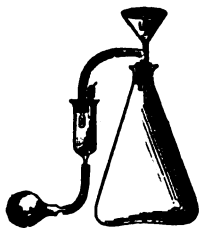
Quire..... 90 Ream.....\$16 00

**Schleicher & Schuell's Washed Filters.**

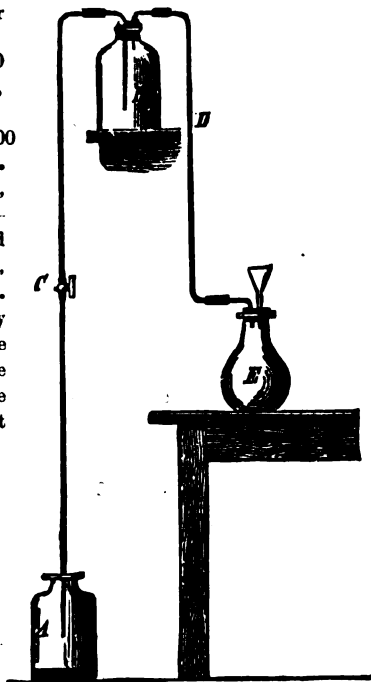
At the suggestion of eminent Chemists, Messrs. Schleicher & Schuell have manufactured a line of round cut filters washed in hydrochloric and hydrofluoric acid, designated C. S. & S. 589 and No. 590. They have been very favorably received by all Chemists for quantitative analysis, as they filter rapidly, retain the finest precipitates (Uran phosphate, Lime oxalate, etc.) and leave only the smallest traces of ashes.



6306



6308



6307

After incineration the residue of these filters weighs.

	Diameter, 5½	7	9	11	12½	15 ctm.
6301. No. 589.	0,00004	0,00007	0,00011	0,00017	0,00021	0,00025
6301a. No. 590.	0,00003	0,00005	0,00008	0,00013	0,00016	0,00019

or ¼ resp. 1-5 of a milligramme for a filter 6 in. in diameter.

The weight of ashes of the smaller filters is so insignificant that it need not be considered at all—a great and obvious advantage where exact and rapid work is required.

We offer these filters in packages of 100, with white, blue, black or yellow ribbon for different purposes.

	Diameter, 5½	7	9	11	12½	15 ctm.
6302. No. 589.	.60	.70	.90	\$1 10	1 35	1 60
6302a. No. 590.	.75	.80	\$1 15	1 45	1 65	2 00

per package  
of 100 filters.

**Usual Discount to the trade, and for large lots on all these papers.**

6303. Ditto, ditto, Chinese Rice Paper, very substantial and quick filtering, size, 18x28 inches. Ream.....\$12 00 Quire..... 75

6304. Ditto, ditto, Japanese, for photographers, to filter emulsions, collodion, etc. A very strong paper, which can be used over again. Size, 11x15.

Ream .....\$3 50 Quire..... \$0 25

6305. Filter Hooks, of glass. For 5, 6, 8, 10, 12 in. funnels.  
Per Dozen, \$0.60 .70 .80 .90 1 00

\* 6306. Filters, of white piano felt, s. c., filtering bags.

No.	1	2	3	4	5	6	7	8	9	10
Measure across the top.	9	10	11	12	15	17	19	20	22	25 in.
Capacity,	¼	½	¾	1	1 ¼	1 ½	2	3	4	5½ gals.
Price.	.45	.50	.60	.80	1 00	1 20	1 40	1 60	2 00	3 00

\* 6307. Filtering Apparatus, Bunsen's, for quick filtrations; with brass stop-cock, 18 feet rubber tubing, and 2 large rubber stoppers, flask, funnel and bottles, complete .....\$5 00

If ordered with cork stoppers instead of rubber stoppers..... 4 50

\* 6308. Ditto, ditto, without the aid of water, according to Fischer, 1 litre cap..... 3 00  
Complete with rubber balloon flask, funnel and platinum filter cone.

Ditto, ditto, Professor Richards, (see Apparatus for, see fig. 5273.)

6309. Filtering Apparatus, Bunsen's, for filtration under increased atmospheric pressure, it consists of

- a, Water Air-pump, complete with barometer, etc. ....\$14 00  
 b, Lead Pipe, to connect the air-pump with the filtering flask, per foot...10 to 15 cts.  
 c, Cone of Iron and Mould of Tin to prepare the platinum cones, per set.....\$1 50  
 d, Platinum Cones, ready made.....75 cts. to 1 50  
 e, Flasks or Bottles of heavy uniform glass well annealed.
- |           |     |          |
|-----------|-----|----------|
| Capacity, | 16  | 32 oz.   |
|           | .35 | .55 cts. |

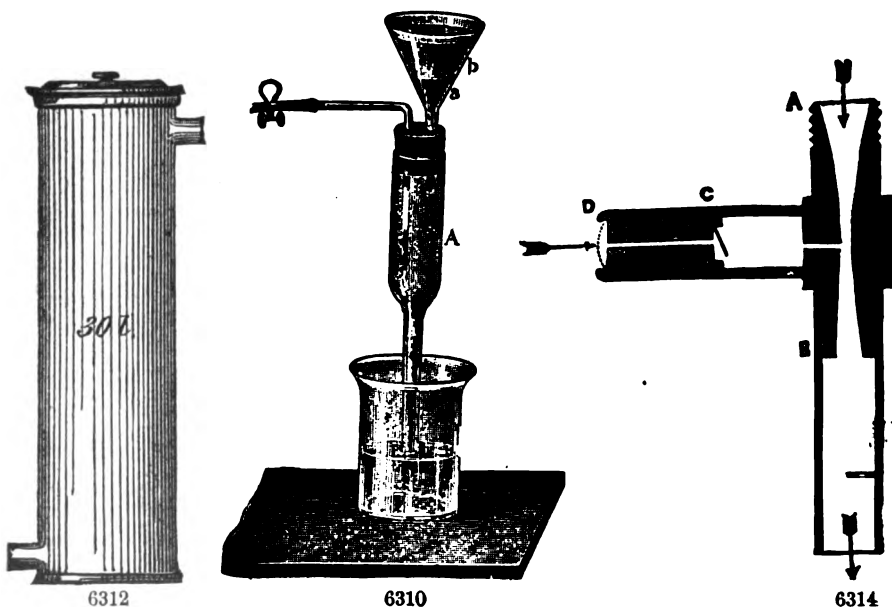
Metal vessel to receive the flask in filtering.....\$2 00

See also filtering pumps.

\* 6310. Ditto, ditto, Weils, (see Fresenius)..... 1 35

— 6311. Filter Cutters.

1½	2½	3	3½	4	5	6 in.
2 75	6 00	7 00	8 25	10 00	12 00	14 00



O\* 6312. Filtering Cylinders, of stone ware.

Dimensions,	34 in. high, 8½ in. wide.	37 in. high, 10½ in. wide.
Capacity,	7½ gallons.	11 gallons.
Price,	4 75	\$7 50

6313. Filter Dryers, of glass, with wide neck.

1½	2	2½ in.
.35	.50	.60 cts. each.

\*6314. Filter Pump, (Aspirator) of Brass, new model, small and very powerful, giving highest vacuum of any water pump known.

No. 1, \$1.50..... No. 2, \$3.00..... No. 3, \$5.00

6315. Ditto, ditto, on base. Price.....\$4.50

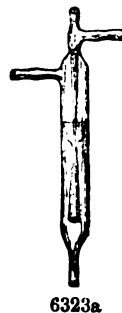
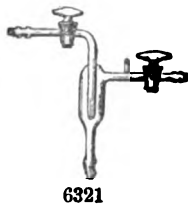
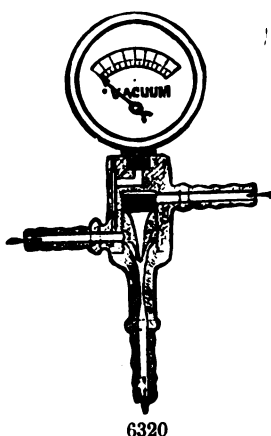
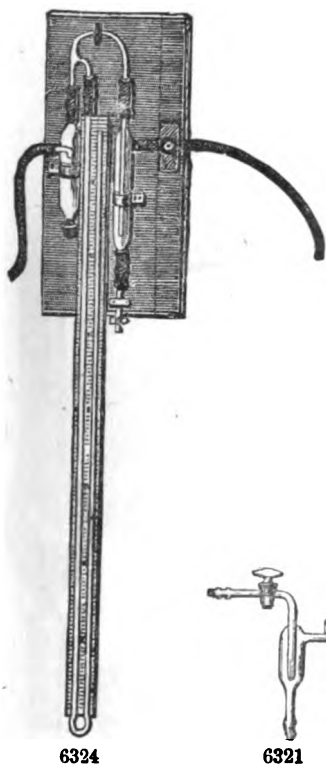
6316. Ditto, ditto, with 2 stop-cocks..... 6 50

6317. Ditto, ditto, with 2 stop-cocks and gauge.....\$11 50

Nos. 6314-6317 are the best filter pumps yet constructed where water pressure is obtainable.

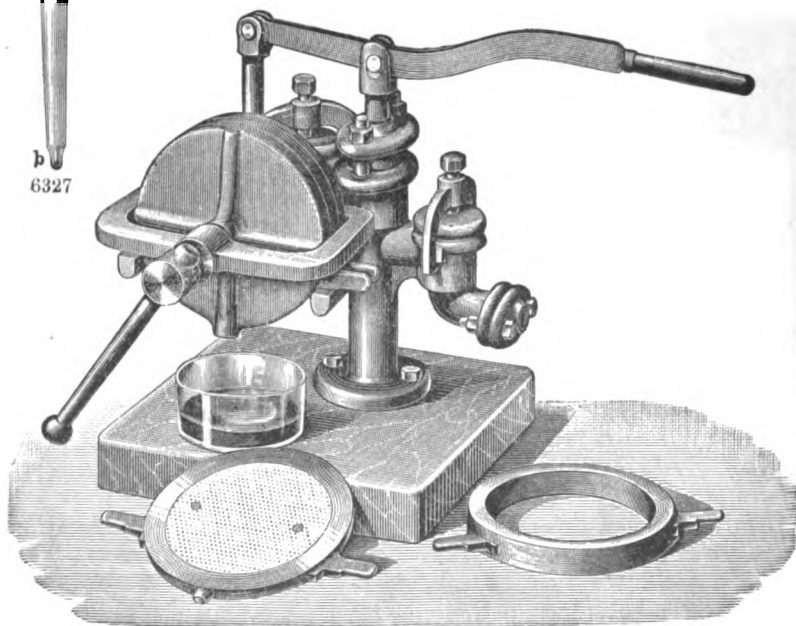
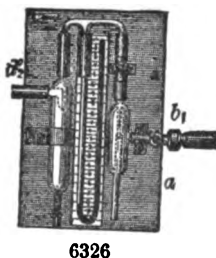


- \* 6318. **Filtering Pump**, of brass, according to Professor Richards, for water pressure only, very powerful. Small....\$1 25 Large,....\$1 75 extra large,....\$9 00
- 6318a. Ditto, provided with vacuum gauge ..... \$5 00 extra.
- 6319. Ditto, ditto, Fischer's, of brass, for quick filtrations, where water pressure can be applied, the pump alone.....\$2 50
- \* 6320. Ditto, ditto, with vacuum gauge..... 7 50
- \* 6321. Ditto, ditto, Fischer's, of glass, the same but with two stop-cocks.....each, 3 00  
Ditto, plain, no stop-cocks. .... 1 20
- \* 6322. Ditto, ditto, for quick filtrations, of glass, working like the preceding, by pressure .....\$1 60



- \* 6323. Ditto, ditto, Muenkes form, of glass, very powerful, with one suction Tube..... \$1 25
- \* 6323a. Ditto, ditto, with two suction Tubes..... 1 60
- \* 6324. Ditto, ditto, Bunsen's, for quick filtrations or evaporations in vacuum where water pressure is not obtainable, after the well-known principles, of entirely improved construction. The plate is made of one solid piece. Instead of the old useless pinch-cocks, it is an improved screw clamp; instead of the cardboard scale one of japanned metal.....\$7 50  
If mounted on black walnut board.....\$1 00 extra.
6325. Ditto, ditto, the glass parts alone.....\$2 00

- \* 6326. Filtering Pump, Bunsen's, improved by Zulkowsky, with shortened Barometer gauge, arranged for direct connection with lead..... \$8 00
- \* 6327. Filtering Tubes according to Fresenius, for filtration by means of glass, wool or asbestos. Each..... 25 cts
- \* 6328. Ditto, ditto, larger size modified..... 50 cts



- \* 6329. Filtering Press, for chemical laboratories and for experimental purposes. Wegelin and Hübner's patent, each provided with 3 filter frames, active surface 400 □ centimeters. No laboratory should be without one, as they are simple and practical for drying and washing the most troublesome precipitates, etc.

a, with perfect washing arrangement pump, in iron.....\$60 00

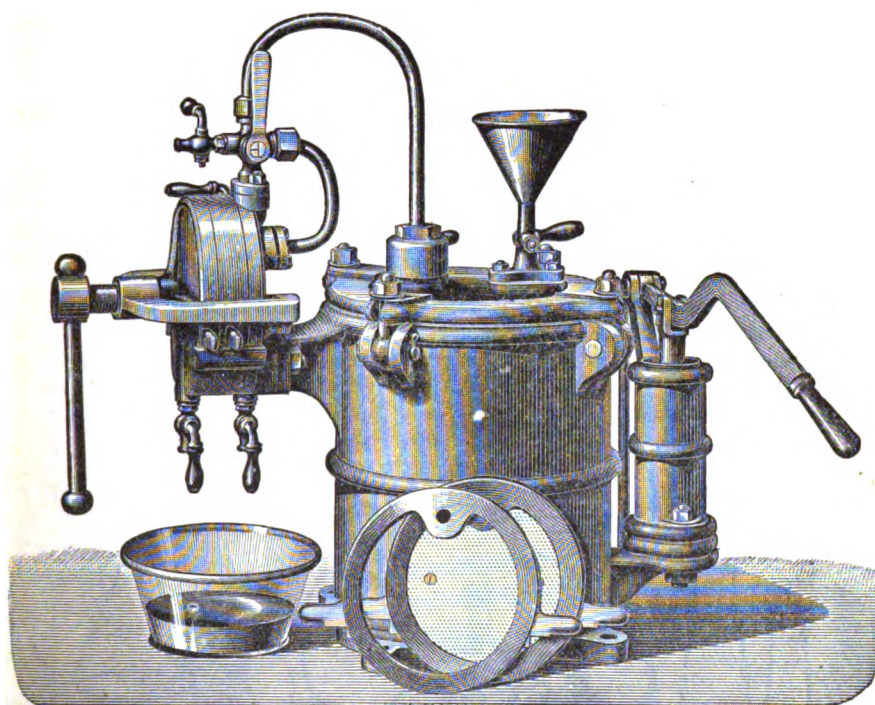
b, Ditto, ditto, pump, in bronze..... 90 00

—\* 6330. Filtering Press, Wegelin-Hübner's patent, combined with montejus and air-pump, very practicable, especially in working with volatile substances.

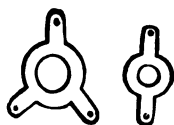
a, in iron .....\$175 00  
b, in bronze ..... 200 00

6331. Larger Presses, for manufacturing purposes, with round or square plates of 20, 27 and 36 in. diameter, according to number of plates, from...\$200 to \$1,000

Special catalogues on application.



6330



6332



6333

\* 6332. Filtering Rings, made of porcelain, with two arms, 25 cts. three arms, 35 cts.

\* 6333. Filtering Racks, made of galvanized wire, to keep the filter from the glass.

5	7	9	12 inches.
.35	.45	.60	.70 cts.

Filtering Stands, see supports for funnels and filtrations.

6334. Finger Cots, pure gum, all sizes, per dozen.....50 cts.

## FLASKS.

**All our Flasks of Bohemian glass are from the famous make of Joseph Kavalier, whose agents we are for the United States.**

\* 6336. Flasks, Bohemian glass, assay conical, with ring, 4 oz., each.....20 cts.  
8 oz., each.....25 cts.

\* 6337. Ditto, new style. Capacity, 2 4 8 16 oz.  
.15 .20 .25 .30 cts.

\* 6338. Ditto, ditto, the same with lip, for precipitations and filtrations, same sizes and prices as the preceding.

\* 6339. Ditto, French style, pear-shaped bulb with long neck, used in silver assay.  
Each, 2 oz.....20 cts. 4 oz.....\$0 25

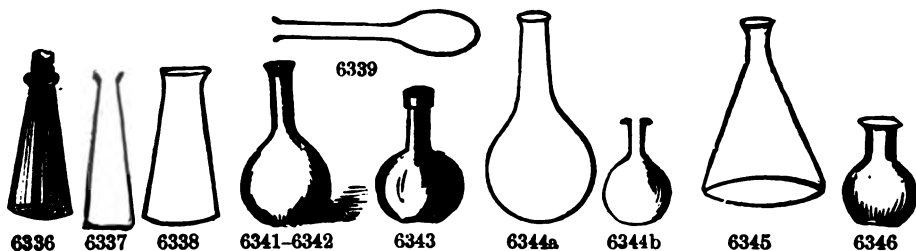
6340. Flasks, of Bohemian hard glass, for Kjeldahl's Nitrogen determination. Capacity  
200 CC, 40 cts. 500 CC, 60 cts. 750 CC, 75 cts. 1,000 CC, 85 cts. each.

\* 6341. Ditto, Bohemian, vial mouth, flat bottom, best glass and shape.

Contents, $\frac{1}{2}$	1	2	4	6	8	12	16	24	32 oz.	3 pint.	
Each,	.8	.9	.10	.12	.15	.18	.20	.25	.30	.35	.40 cts.

Contents, $\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2	3	5 gals.	
Each,	.45	.55	.70	.85	\$1 00	1 45	2 90

6 to 8 gallons to order.



\* 6342. Ditto, German, of best, light, and well-annealed glass, vial mouth, flat bottom.

Contents, $\frac{1}{2}$	1	2	4	6	8	12	16	24	32 oz.	
Each,	.7	.8	.10	.11	.12	.15	.18	.20	.25	.30 cts.

Contents, $\frac{1}{2}$	$\frac{3}{4}$	1	2	3 gals.	
Each,	.45	.55	.70	\$1 00	1 45

\* 6343. Ditto, ditto, with heavy ring, to bear corking, same price as the vial mouth, Bohemian.

\* 6344. Ditto, round bottom, vial mouth, shape a or b.

Contents, 1	2	4	8	16	32 oz.	$\frac{1}{2}$	1	2	3 gals.	
Each,	.9	.10	.12	.18	.25	.35	.45	.70	1.00	1.45

\* 6345. Ditto, Erlenmeyer's form, Bohemian glass. A very desirable flask.

1	2	4	6	8	16	24	32 oz.	$\frac{1}{2}$	1 gal.
.10	.11	.14	.18	.20	.28	.35	.40	.50	.80

In ordering please mention if wide or narrow mouth are wanted.

\* 6346. Ditto, ditto, light, with extra wide and low neck, for carbonic acid apparatus.

1	2	4 oz.	
Each,	.15	.18	.20 cts.
Dozen,	\$1 40	1 60	2 00

Flask provided with roughened label to write on at 5 cts. each.

- \* 6347. Flasks, Bunsen's Filtering Flasks, very heavy, with rubber stopper, selected funnel and connecting tube.

Contents,	Pint,	Quart,	$\frac{1}{2}$ gal.
	.80	\$1 00	1 50
Flasks only,	.35	.50	.75

- \* 6348. Ditto, ditto, for fractional distillations, with a tube inserted half-way up the neck, a, b, c, d. Tubes set high or low on the neck.

1	2	4	8	16	32	64 oz.
.15	.20	.25	.35	.45	.65	\$1 00

Flasks, of copper, see Retorts.

- \* 6349. Ditto, for fractional distillation, according to Ladenburg, with 3 and with 4 bulbs, at the neck.

Capacity	100	200	500	1000 CC.
Price,	.40	.55	.80	\$1 00 each.

- \* 6350. Ditto, for fractional distillation, with inside condenser, according to Kreusler, (Chem. Zeitung, 1884, page 1222.)

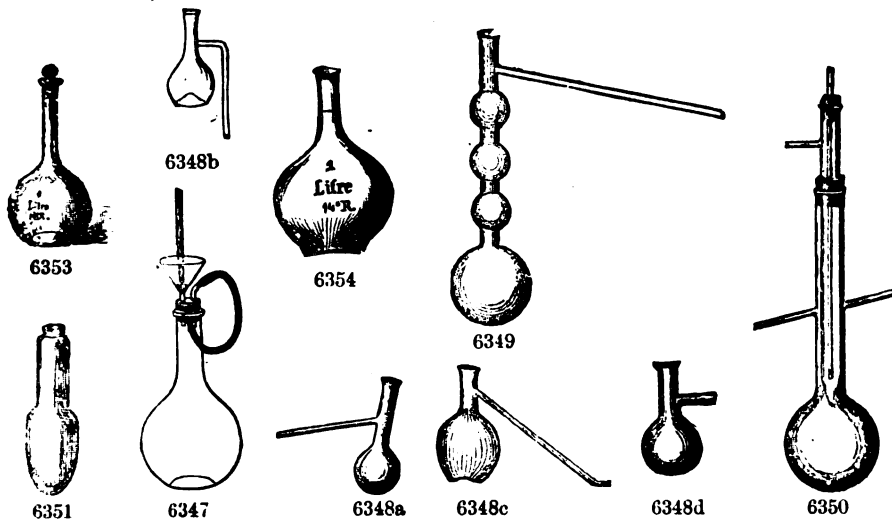
500	1000 CC.
\$1 00	1 50 each.

- \* 6351. Flasks, Bologna, small.....10 cts. Doz.....\$1 00

6352. Ditto, large.....15 cts. Doz.....1 50

Ditto, for gas evolutions, see Gas Bottles.

Ditto, ditto, fitted with rubber stopper, funnel and delivering tube, see No. 6473.



- \* 6353. Ditto, volumetric, so-called Litre Bottles, most accurately gauged, with glass stopper. European make.

25 CC.	50 CC.	100 CC.	200 CC.	250 CC.	$\frac{1}{2}$ litre	1 litre	2 litre.
.25	.30	.35	.45	.60	.75	.90	\$1 30

- \* 6354. Ditto, ditto, very exact, with one mark on neck, not stoppered. imported.

10	20	25	50	100	200	250	300	500	1,000	2,000 CC.
.15	.18	.20	.25	.30	.35	.40	.50	.60	.75	\$1 10

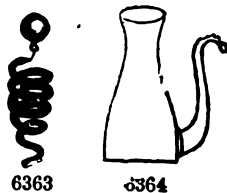
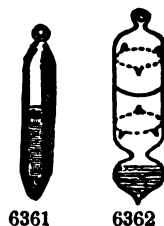
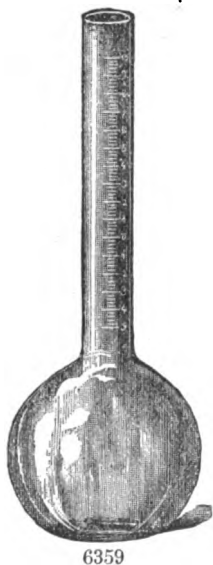
6355. Ditto, ditto, not graduated, with varnish mark for self-graduation.

25	50	100	250	500	1,000 CC.
.15	.20	.25	.30	.40	.50

6356. Ditto, volumetric, so-called Shaking Flasks, strong in glass, shape like Bottles, graduated and stoppered.

500	1,000 CC.
.75	\$1 00

6357. Flasks, graduated, with two marks on the neck, European make. (So-called Sugar Flasks.)
- |               |                 |                 |
|---------------|-----------------|-----------------|
| 50 and 55 CC. | 100 and 110 CC. | 200 and 220 CC. |
| .30           | .40             | .60 cts.        |
6358. Ditto, ditto, **not graduated**, with varnish marks for self-graduation.
- |               |                 |
|---------------|-----------------|
| 50 and 55 CC. | 100 and 110 CC. |
| .25           | .30 cts.        |
- \* 6359. Ditto, ditto, with graduated neck; mark 0-100 CC, each line of division-0, 2 CC; from 5 + 10 CC = 5-9 + 10-100 CC..... each, 75 cts.
- \* 6360. Ditto, ditto, for Saccharometric Polarization, according to Kohlrausch, with flanged neck, and with one mark, 100 CC, .45 cts. 200 CC, .60 cts. each.
- \* 6361. Float, Erdmann's, for Burettes..... 25 cts.
- \* 6362. Ditto, for Burettes, new style, with glass points, preventing adhering to the walls. Price ..... 50 cts.
- \* 6363. Ditto, for suspending specimens in anatomical jars, etc., according to size, from 10 to..... 25 cts. each.



\* 6364. Florentin Receivers.

	Pint,	Quart,	$\frac{1}{2}$ gal.
	.45	.60	.90
With stopper,	.55	.75	\$1 20

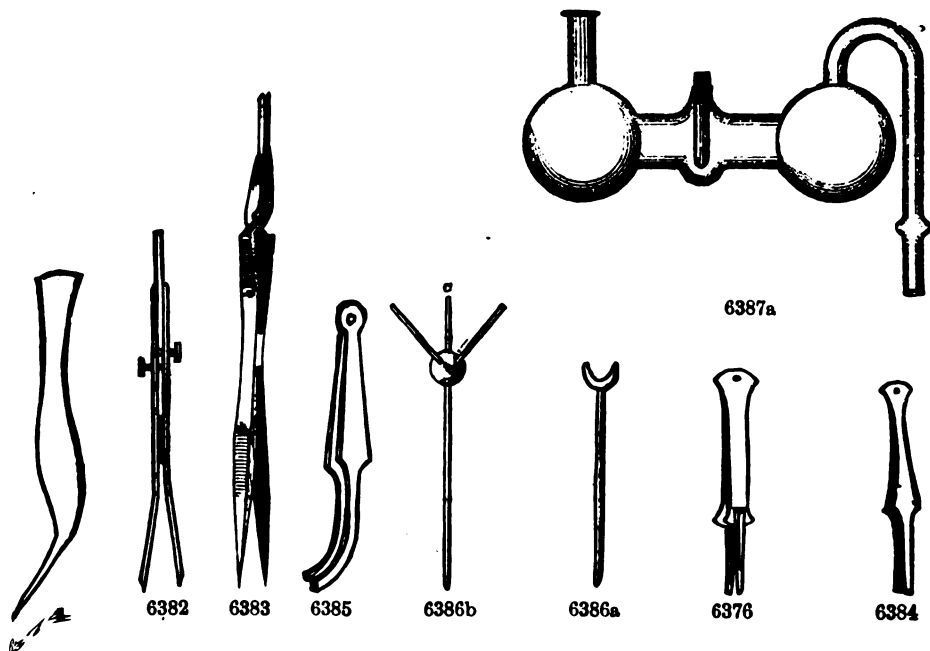
6365. Foil, of aluminium, according to thickness, from..... 10 cts. to 50 cts. per oz.
6366. Ditto, of pure copper, (chem. pure,) thin, per lb..... \$1 50
- 6367. Ditto, ditto, heavier, (999 fine,) per lb..... 50 cts.
- 6367a. Ditto, of gold, very thin leaf, per book..... 40 cts.
- 6368. Ditto, of pure French platinum, in three thicknesses, thin, medium, heavy, see platinum, per gramme..... 80 cts.
- 6369. Ditto, of silver, very thin leaf, per book..... 20 cts.
- 6370. Ditto, ditto, regular foil, per ounce..... \$1 20
6371. Ditto, of tin, commercial..... per lb. 25 cts.
6372. Ditto, ditto, pure tin..... “ 50 cts.
6373. Ditto, ditto, rough on one side, for pasting on glass..... “ 50 cts.

Other foils see leaf.

## FORCEPS.

- |   |     |      |
|---|-----|------|
| * 6374. Forceps, brass, ends bent, very fine finish.....  | 25  | cts. |
| 6375. Ditto, " " " nickel plated (solid nickel, 60 cts.).....   | 25  | cts. |
| * 6376. Ditto, extra stout, straight.....   | 50  | cts. |
| 6377. Ditto, " " " nickel plated.....   | 55  | cts. |
| — 6378. Ditto, ends bent, with ivory tips.....  | 60  | cts. |
| 6379. Ditto, for buttons, steel, Swansea style.....   | \$1 | 00   |
| 6380. Ditto, " " " nickel plated, Plattner's (solid nickel, \$1.25).....  | 70  | cts. |
| 6381. Ditto, 7 inches long, forceps on both ends, one end with ivory tips, Plattner's                               |     |      |
| Price .....   | \$1 | 40   |
| ○* 6382. Ditto, nickel plated, plates of platinum, Plattner's form, heavy tips                                      | 3   | 00   |
| ○* 6383. Ditto, nickel plated 5 1-2 in. long, forceps on both ends, one end with heavy platinum plates.....         | \$3 | 00   |
| * 6384. Ditto, of steel, plain.   | 4   | 4    |
|   | .8  | .10  |
|   | 5   | .15  |
|   | 6   | .20  |
| * 6385. Ditto, goosenecks, 6 in. long, brass, nickel plated ; a most practical forceps, which will not corrode..... |     | .45  |
| Other Forceps, see Crucible tongs.  |     |      |

**Other Forceps, see Crucible tongs.**



- \* **6386. Forks, of wood, fitting our support tables.**

	12	15	20 inches.
a, .25	.35	.45 cts.	
b, .30	.40	.50 "	

**Fractional Distillation Apparatus,** (see also Apparatus, Flasks or Tubes for fractional distillation.)

- |  |        |
|--|--------|
| 5387. Fractional Distillation Apparatus, or dephlagmatisator, after Hempel, will concentrate 25% alcohol to 95% in one distillation..... | \$2 00 |
| * 6387a. Freezing Apparatus, on Carre's principle, made of glass, small.....   | 2 50   |
| Large.....   | 4 00   |

## FUNNELS.

- \* 6388. **Funnels, glass, of best German make, long, thin stems, angle of 60°; the end of the stem is ground to a point.**

Diameter,	1	1½	2	2½	3	3½	4	5	6	7	8 inches.
Each,	.7	.8	.10	.12	.15	.18	.20	.25	.30	.40	.50 cts.
Diameter,					9	10	12 inches.				
					.65	\$1 00	1 35				

6388a. Ditto, ditto, without stems, for sugar analysis. 3 in., \$2 00; 3½ in., \$2 50 doz.

- \* 6389. Ditto, ditto, with edges ground even; angle exact of 60°. These funnels are usually known as **Bunsen's**; having very thin and extra long stems to go through the rubber stopper when used with a filtering pump.

Diameter,	1	1½	2	2½	3	3½	4	4½	5	6 inches.
Each,	.10	.12	.15	.18	.20	.25	.30	.35	.45	.50

6390. Ditto, of best **Bohemian glass**; edges ground even; stem ground to a point; angle exact of 60°.

Diameter,	1½	1¾	2¼	2½	3¼	3½	4¼	4½	5¼	6	7	8 in.
Each,	.10	.12	.15	.18	.20	.25	.30	.40	.45	.50	.65	.80 cts.

- \* 6391. Ditto, porcelain. Diameter, 4 5 6½ 7 in.  
Each, .40 .60 .90 1 20

- \* 6392. Ditto, to suspend over dishes in the process of evaporation, according to Victor Meyer. Diameter, 8½ 10½ in.  
Each, \$1 20 2 00

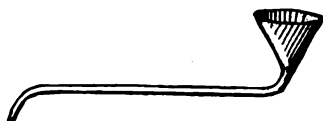
- \* 6393. Ditto, for filling plain retorts, with long bent tubes.

Length,	16	20	24 in.
Diameter of funnel,	2	2½	3 in.
Price,	.20	.25	.35

- \* 6394. Ditto, of agate ware. ½ pint, Pint, Quart, ½ gal.  
Each, .30 .35 .45 .60



6388



6393



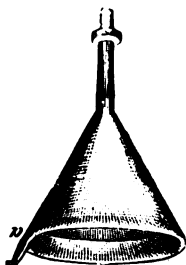
6389



6391



6395



6392



6394

- \* 6395. Ditto, **hard rubber**. Capacity, 4 6 8 16 32 oz.  
Each, .30 .40 .45 .50 .60 cts.

6396. Ditto, made of tin.

Capacity,	½	½	1 pint,	1 quart,	½ gal.	1 gal.
	.10	.12	.15	.20	.25	.30 cts.

6397. Ditto, of copper, .50 .70 .85 \$1 00 1 30 1 70

6398. Funnels of glass, Plattner's, so-called test tube funnels, set..... 20 cts.

6399. Ditto, of porcelain; conical shape and perforated; sides used as drainers for crystals, etc., see Strainers.



## ○ 6399a. Funnels, of German acid proof stone ware.

Diameter,	4	5	6	7	8	9	10 in.
Price,	.20	.25	.30	.40	.50	.60	.80 each.
Diameter,	11	12	13	14	15	16 in.	
Price,	\$1 00	1 25	2 00	2 75 each.			

## \* 6400. Ditto, conical shape and perforated with large holes, called Filtering Baskets.

No.	1	2	3	4	5
Diameter on top,	4½	5½	6½	8½	10½ in.
Price,	.65	.90	1 40	1 80	3 00

## ○\* 6400a. Ditto, Separatory, with stop-cock, of German acid proof stone ware.

Diameter,	9	12 inches on top.
Outlet,	½	¾ inch bore.
Price,	\$2 25	3 00 each.

## \* 6401. Ditto, separatory, of glass, with glass stop-cock, open top.

½ pint, 3 in.	½ pint, 4 in.	1 pint, 5 in.	1 quart, 6 in.	½ gal., 8 in.	1 gal., 10 in.
\$1 20	1 40	2 00	2 40	3 00	4 00

## \*\* 6402. Ditto, ditto, globe shape, glass stoppered. The 1, 2, 4, 6, 8 and 16 oz. can be had with short or long tube, like figure 6402b.

1	2	4	6	8	16	32 oz.	½ gal.	1 gal.
.90	\$1 00	1 20	1 25	1 50	2 00	2 75	3 00	4 25

## \*\* 6403. Ditto, ditto, cylindrical, open top, style a or b.

1	2	4	8 oz.
\$1 00	1 00	1 20	1 40



6400



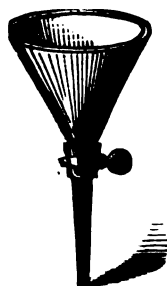
6405a



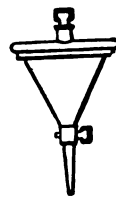
6408a



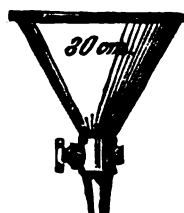
6407



6401



6404



6400a



6402b



6403b



6403a



6406



6402

## \* 6404. Ditto, separatory, with cover, Bohemian glass. Quart..... 3 00. 3 pts. ... \$3 50

6405. Ditto, separatory, cylindrical shape, with stopper and Geissler's stop-cock, also useful for displacements. Capacity, 10 20 30 4 oz.

Price,	\$1 60	2 00	2 25	2 75 each.
	1 75	2 25	2 50	3 00 "

## \* 6405a. With tubul. at the side,

## \* 6406. Ditto, separatory, with ground rod and extra large openings for separating two liquids quickly, as used for the manufacture of nitro-glycerine, etc.

Pint,	Quart,	½ gal.,	1 gal.,	2 gals.,
.60	.75	\$1 50	2 50	3 50

## \* 6407. Ditto, of tin, for hot filtrations, Plantamour's..... \$1 50

6408. Ditto, ditto, new style, with steam coil..... 2 00

— 6403a. Ditto, Koch's, for bacterioscopical work, of heavy copper on movable legs.... 5 00

— 6409. Funnels, with long capillary tube: to fill endimeters, etc., with mercury free of air bubbles..... 30 cts.

— 6410. Ditto. with glass stop-cock..... \$1 50

## \* 6411. Funnel tubes, thistle top, light, brown glass.

10	12	15	18	20	25	30 in.
.8	.10	.12	.15	.20	.25	.30 cts.

## \* 6412. Ditto, ditto, conical, stout glass.

10	12	15	18	20	25	30 in.
.10	.12	.15	.18	.22	.25	.30 cts.

6413. Ditto, ditto, with loop bent, s. c. safety tubes..... 20 cts.

\* 6414. Ditto, ditto, same, with conical top; it can be used as a quick filtering funnel. Price..... 20 cts.

— 6415. Ditto, ditto, with three-way stop-cock for gas burette..... \$2 50

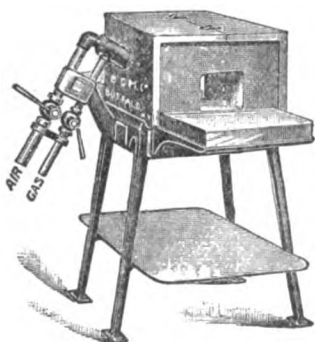
\* 6415a. Ditto, ditto, Vogel's, a combination of funnel and delivery tube ..... 40 cts.

Other Funnel Tubes, with bent, etc., see Safety Tubes.

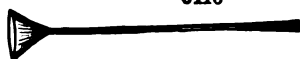
○ 6416. No. 19 Cyclone Tool Forge, for general workshop and tool-room purposes.

Cyclone Tool Forge ..... \$10 00

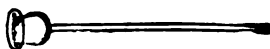
Fletcher Foot-Blower, No. 10b..... 8 00

Roots' Power Blower,  $\frac{1}{2}$  B. S. .... 20 00Rubber Tubing,  $\frac{1}{2}$  inch, for gas or air connection, per foot, .28

6416



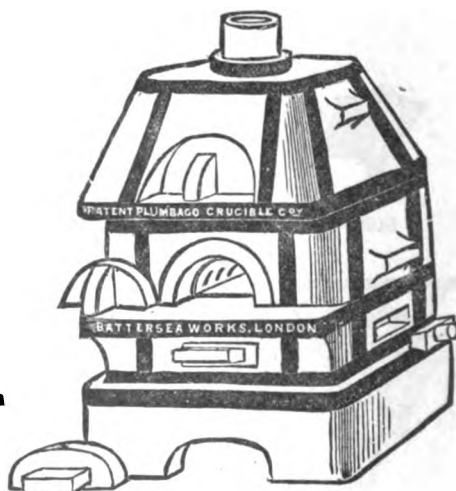
6412



6411



6414



6417

## FURNACES.

(a) For Assaying.

○\* 6417. Furnaces, Assay, Battersea, of clay, iron bound. Strongest and best iron bound clay furnace ever made. Hundreds of them are in use throughout the country, and are giving perfect satisfaction.

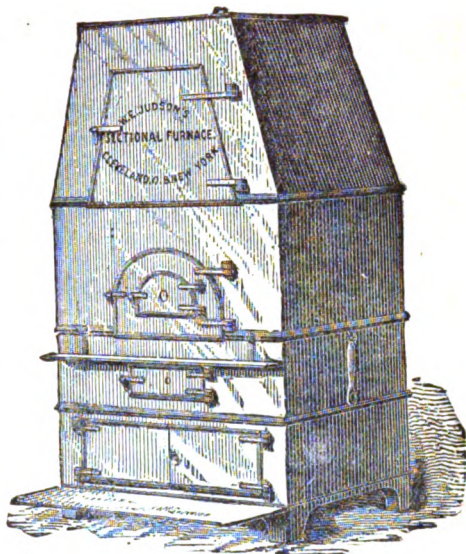
No.	Height.	Diameter.	Size Muffle.	Price.
A,	23 $\frac{1}{2}$ in.	12 $\frac{1}{2}$ in.	7 x 4 $\frac{1}{2}$ x 3 in.....	\$17 00
B,	25 $\frac{1}{2}$ "	13 $\frac{1}{2}$ "	8 $\frac{1}{2}$ x 5 x 3 $\frac{1}{2}$ ".....	19 00
C,	27 "	14 $\frac{1}{2}$ "	9 x 5 $\frac{1}{2}$ x 3 $\frac{3}{8}$ ".....	24 00
D,	28 $\frac{1}{2}$ "	15 $\frac{1}{2}$ "	10 x 6 x 4 ".....	26 00
E,	29 $\frac{1}{2}$ "	16 $\frac{1}{2}$ "	12 x 6 x 4 ".....	29 00
F,	30 "	17 $\frac{1}{2}$ "	14 x 8 x 5 ".....	33 00
K,		23 "	15 x 9 x 6 ".....	67 00

- \* 6418. Furnace, assay, Judson's Sectional; of iron, lined with fire-brick, depth, 13 in.; size of muffle, 12x6x4 in. (Battersea, J.), with set of concentric rings for the top to use with sand-baths, etc.....\$40 00

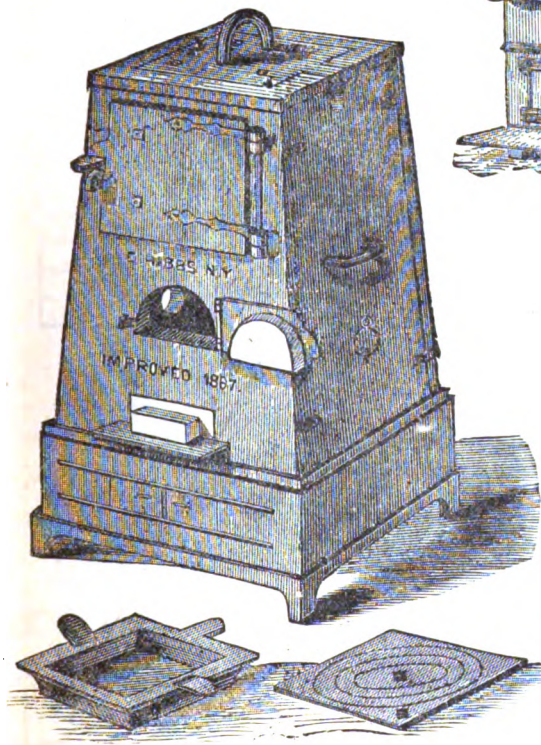
6419. E. & A., new muffle and Crucible Furnace, an economical, substantial and practical furnace for actual work, this furnace is the least expensive and most effective, it is lined with regular fire-brick which are interchangeable and can be had wherever a furnace will be used. Size A for J muffle, 4x6x12, opening on top for crucible, 10x10 in. ....\$30 00

Size B for K or L muffle, 6x9x15 in. opening for crucible, 14x14. 50 00

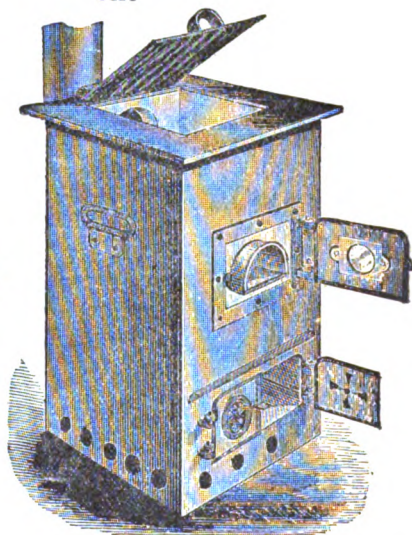
- 6420. Furnace, Assay, Judson's Sectional  
Size of muffle, 15x9x6 in. (Battersea L.) Price.....\$50 00



6418



6422

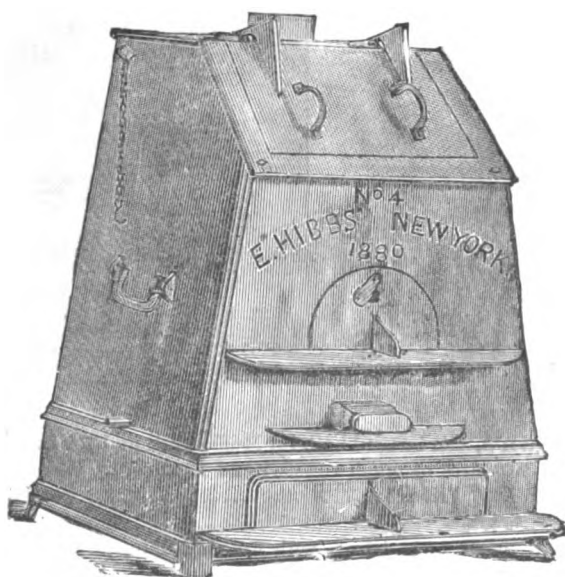
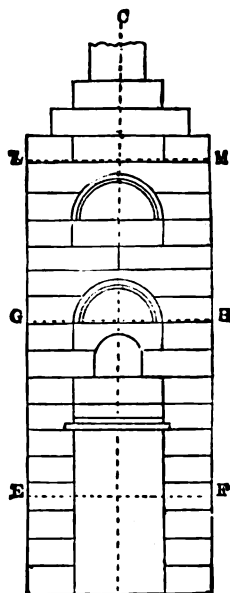


6421

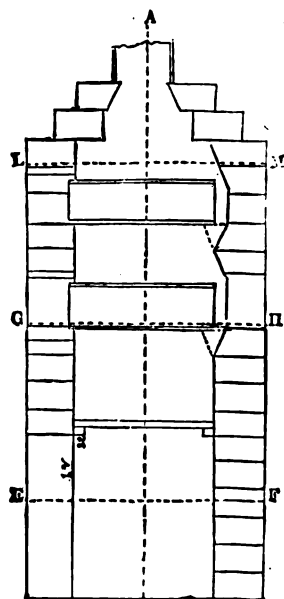
- \* 6421. Furnace, Assay, Brown's, can be used both for Muffle work and for Crucible operations; takes two sizes of muffles 12x6x4 and 10½x5½x3½. Weighs packed for shipment, 125 lbs. Price.....\$20 00
- \* 6422. Ditto, for assaying, Hibb's, small, of cast iron, with fire clay lining; taking a muffle of about 4x8 inches. Complete.....\$30 00

- 6423. Furnace, assay, No. 2, same as above, only larger in proportion, to take a muffle  $5\frac{1}{2} \times 11\frac{1}{4}$  in..... \$50 00
- \* 6424. Ditto, ditto, Hibb's, extra large size, for scorification assay, of improved construction, 39 inches high, by 30 inches wide, and 24 inches deep.  
Size a, taking a muffle of  $5 \times 9 \times 17$  in ..... \$75 00
- \*\* 6425. Ditto, for assaying, according to Professor Ricketts, (see his notes on assaying, pages 24 and 25,) for the use of soft coal, taking two muffles  $5 \times 8 \times 14$  in. Furnace is built in brick, bound by  $1 \times \frac{1}{4}$  inch iron. We furnish everything necessary to build the furnace, with the exception of the bricks, viz., top and bottom plates, binding, grate, bars, front doors, etc., for ..... \$30 00
- Without bottom plate for ..... 25 00
6426. Ditto, for crucible assay, California pattern, round, iron, fire-brick lined furnace, taking G and still larger size crucible. Being very light, it is the most economical furnace for shipment. Similar to figure 6421 ..... \$15 00

Furnaces for assaying of any description built to order at reasonable rates.



6424



6425b

○\* 6427. Furnace, using gas as fuel. For assaying, enamelling, and all operations where exact temperatures are required, not exceeding the fusing point of copper. The burners for these furnaces are of the same construction as the No. 6428 Crucible Furnace.

**Size No. 3.** Muffle, inside clear working space, exclusive of neck,  $3 \times 4 \times 2\frac{1}{2}$  inch high. Requires  $\frac{1}{2}$ -inch bore gas pipe. Chimneys 6 feet high are included in prices, extra chimney 20 cents per foot for all patterns of furnace. Price. \$17 00

Extra Muffles..... 1 10

Extra Muffle Domes..... 1 10

**Size No. 4.** Inside Muffle space  $3\frac{1}{2} \times 5 \times 3$  in. high. Requires  $\frac{1}{2}$ -inch clear bore gas pipe and tap. Price .. \$20 00

Extra Muffle or Dome..... each 1 40

**Size No. 5.** Inside muffle space  $4\frac{1}{2} \times 7 \times 3\frac{1}{2}$  in. high. Gas supply as above.. 30 00

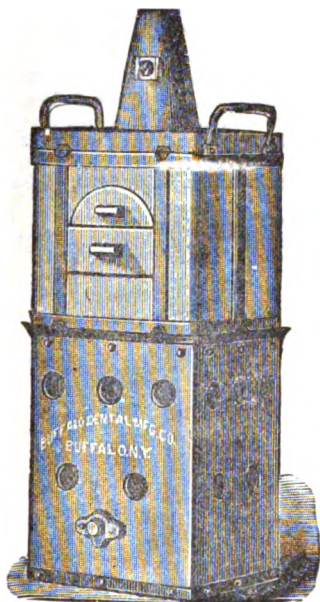
Extra Muffle or Dome..... each, \$1 75 extra.

**Size No. 6.** Inside Muffle space  $5\frac{1}{2} \times 8 \times 4\frac{1}{2}$  in. requires 1 in. clear bore gas supply.

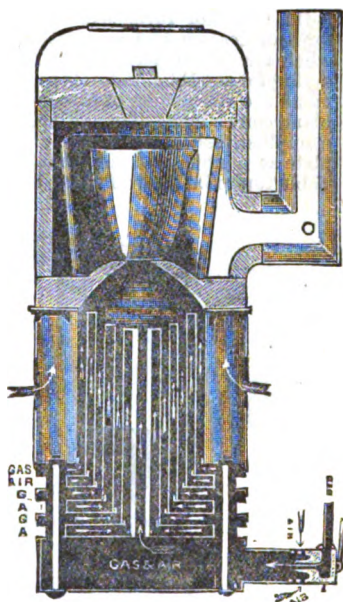
Price..... \$45 00

Extra Muffle or Dome..... each, \$2 75 extra

Plumbago fittings and crucibles must be heated slowly the first time they are used.



6427



6428

○\* 6428. Crucible Furnace, Gas. This will take crucibles up to  $4 \times 3\frac{1}{2}$  inches and with  $\frac{1}{2}$ -inch gas pipe, and a pressure of gas equal to 2 inches of water, supplying about 50 feet per hour, will melt 3 or 4 lbs. of brass in about 30 minutes, and the same quantity of cast iron in about 60 minutes from the time the gas is first lighted. It will melt a crucible of silver or gold in 30 minutes.

No. 15, Crucible Furnace, complete..... \$16 00

Plumbago Crucibles, No. 3, each ..... 30

Plumbago Cylinders..... 1 10

Fire clay casing..... 3 00

Lid ..... 1 00

Grate..... 1 00

Burner..... 8 00

For directions see special list.

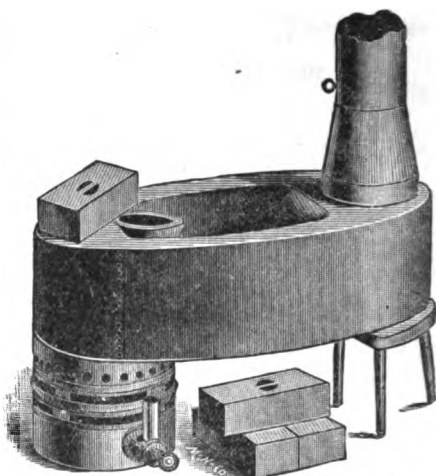
○\* 6429. No. 630. **The Monitor.** A new form of Gas Assaying Furnace.  
For Directions, see Special list.

Price as represented in cut.....	\$18 00
Fire-clay Slabs for covers, each.....	50
Body of Furnace.....	8 50
Platform.....	15
Supports for Platform, each.....	05
Tripod.....	50
Burner.....	6 00
Chimney pipe, per length.....	35

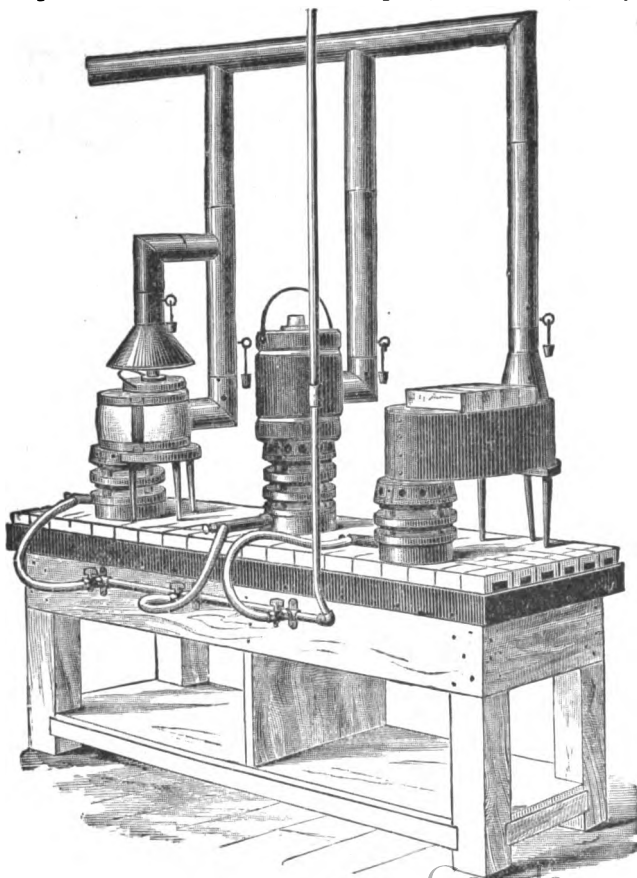
One length of chimney pipe with damper, crucible and tongs are included in price of furnace.

○\* 6429a. **Assayers' Plant of Gas Furnaces.** The illustration faithfully represents a group of gas assaying furnaces. The furnace at the left, No. 6430, is for roasting sulphurets, etc. the center one, see figure 6428, (Fletcher, No. 15) is for crucible fusions, taking an '8' Battersea crucible (5 inches deep, by 4 inches across), and the one at the right is the 'Monitor' furnace (see No. 6429a) for scorification and cupellation. The whole forming as perfect a plant for assaying for small laboratories as it is possible to desire.

We can conscientiously recommend the entire suite of furnaces on account of its advantages in the following particulars: convenience of operating, control of the heat, saving of fuel and time, freedom from dust, ashes, smoke and excessive heat, and entire absence of waste. Price complete as per cut, without the table top..... net, \$50 00  
Table top to be built of red brick. Price of parts, see Nos. 6428, 6429, 6429b.



6429





- \* 6429b. Direct draft roasting furnace, see figure, furnace at the left of plant No. 6429a. This furnace is the one recommended as third furnace of the assayers plant of Gas Furnaces for roasting ores. It is shown on page 142. Prices include 1 length of pipe, damper, crucible and tongs. Gas pipe required for the No. 163,  $\frac{3}{4}$ -inch, for the No. 363,  $\frac{1}{2}$ -inch.

No. 163, for No. 1 Crucibles....\$12 00. No. 363, for No. 3 Crucibles....\$14 00

(b) *Furnace for Melting.*

- \* 6430. Furnace, Gas, of clay; portable, iron bound, for melting gold, silver, copper, etc.

No.	A	B	C	D	E	F
Diameter,	9 $\frac{1}{4}$	9 $\frac{1}{4}$	11	13 $\frac{1}{4}$	11 $\frac{1}{2}$	18 in.
Height,	17 $\frac{1}{2}$	20	22	26	28	32 "
Price,	\$8 50	10 50	12 50	15 00	17 50	27 00



6430



6431

- \* 6431. Fletcher's Gasoline Generator and Furnace.—FOR HIGH TEMPERATURES. The well-known Injector Gas Furnace, can now be supplied with a small, simple and safe arrangement for burning the vapor of the light petroleum or gasoline, giving a power and efficiency full equal to that which can be obtained by a large gas supply. The arrangement is in every way as simple as when gas is used, requiring no more trouble or attention.

Generator .....	\$15 00
Furnace A; Blower, Generator and Tubing complete, for use with either gasoline or coal gas .....	\$25 50
Furnace B; Blower, Tubing and Generator complete. ....	30 00

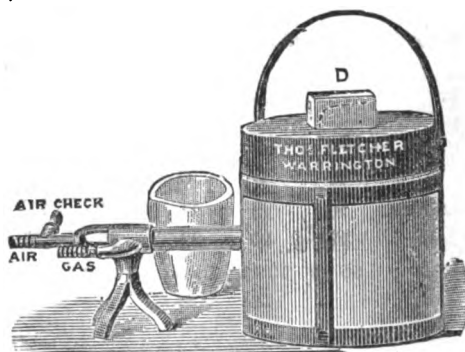
The engraving shows the B size Furnace, Generator and Blower, as when in use. Scale, 1 inch to the foot.

The foot blower supplied with above is No. 9b.

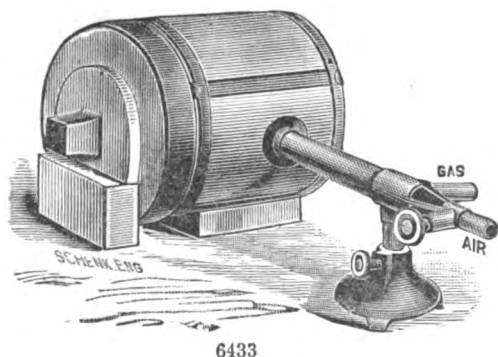
- 6431a. Ditto, the same outfit in smaller size to suit furnace No. 6438, complete....\$15 50  
Generator, see figure 6431, above..... 6 00

The foot blower used is No. 9a.

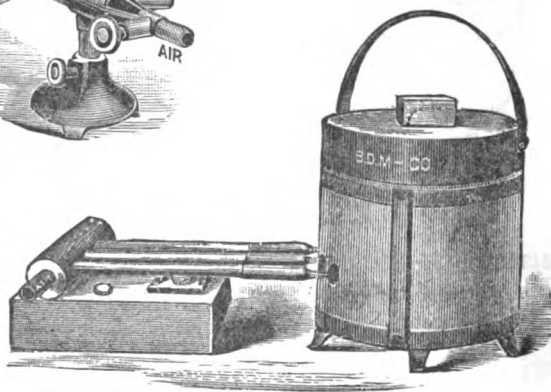
- \* 6432. **Furnace Gas, Fletcher's Perfected Injector** for metallurgists, jewelers, chemists, iron and brass castings, manufacturers of artificial gems, etc. **Furnace A**, taking No. 1 crucible, capacity, 2 lb., copper, complete.....\$4 50
- \* 6432a. Ditto, ditto, **Furnace B**, taking No. 3 crucible, capacity, 6 lb., copper, complete. Price.....\$7 00
- For foot blowers, see Bellows.



6432



6433

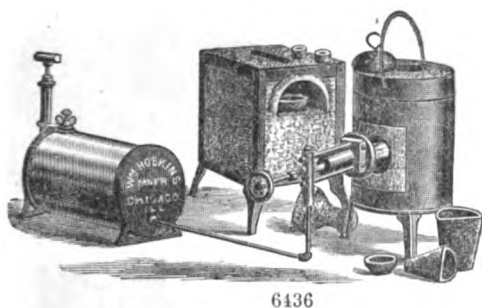


6432b

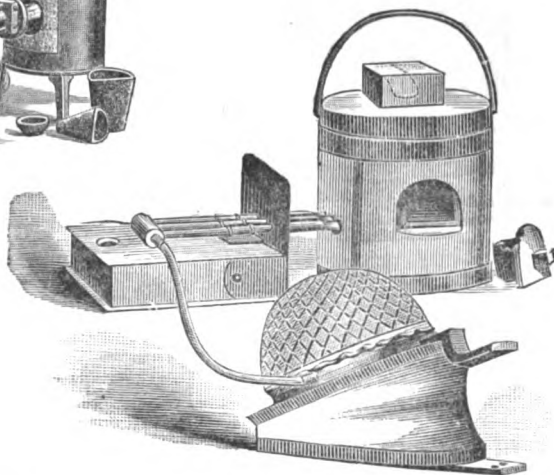
- \* 6432b. Ditto, ditto, for refined petroleum. **Furnace A**, taking No. 1 crucible, two burners, without blower.....\$10 00
- 6432c. Ditto, ditto, **Furnace B**, taking No. 3 crucible, three burners, without blower 13 00
- 6432d. Ditto, ditto, **Furnace C**, taking No. 6 crucible, four burners, without blower. 16 00
- \* 6433. **Perfected Injector—Combined Crucible and Muffle Furnace.** For Gas. This is supplied with muffle fittings, and can be used either as a crucible or muffle furnace. The illustration shows it as arranged for use with the muffle. When used as a crucible the casing is turned on end, and a large round lid is used. In this case the hole opposite the one used for the burner should be stopped with the taper plug furnished for the purpose. One size only is made corresponding to the B injector. Combined crucible and muffle furnace. Size of muffle  $3\frac{1}{2} \times 2\frac{1}{2}$  in.  $\times 6\frac{1}{2}$  in. inside.....\$11 00
- Extra muffles..... 1 50



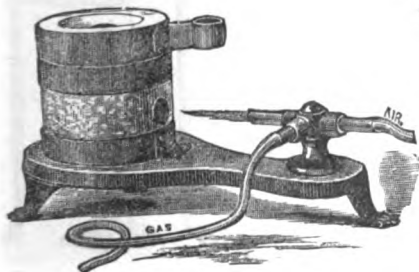
- 6433a. Furnace, arranged like 6431 for Gasolene Gas.....\$35 00
- \* 6434. Ditto, ditto, for refined petroleum. This style of furnace is a great improvement, and almost indispensable to prospectors and miners. Combining a muffle and crucible furnace in the most condensed form, with a fuel everywhere obtainable, and being not heavy, it can be carried with ease and allows assays to be made right on the spot. Size of muffle  $3\frac{1}{2} \times 2\frac{1}{2}$  in.  $\times 6\frac{1}{2}$  in. inside.....\$17 00
- \* 6436. Ditto, ditto, for prospecting. Hoskins patent Hydro-Carbon Blow-pipe and Furnaces. No. 2 Muffle Furnace, muffle  $8 \times 4\frac{1}{2} \times 3$  in. \$10 00 No. 3 Furnace \$15 00  
Extra muffles for No. 2... 75 cts. For No. 3,  $10 \times 6 \times 4$  in..... 1 00
- \* 6435. No. 1 Crucible Furnace, taking Colorado B. Crucible 4 inches in diameter,  $5\frac{1}{2}$  inches deep inside Hoskins' patent.....(No. 2, \$5 00).....\$4 00
- 6435a. Blow-pipe No. 2, with half gallon tank made entirely of seamless brass ....\$23 00
- 6436a. Blow-pipe No. 2, Muffle Furnace No. 2 and Crucible Furnace No. 1..... 37 00.
- 6436b. Blowpipe No. 3, 1 gallon tank..... 26 00



6436



6434



6437

- \* 6437. Furnace, for crucibles,  $3\frac{1}{2} \times 2$  in., for gas. Fletcher's patent.

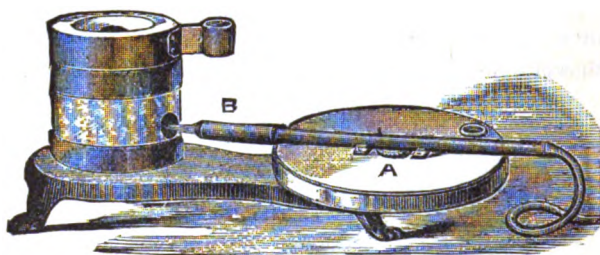
The furnace consists of a simple pot—for holding the crucible—with a lid and a blow-pipe, all mounted on a suitable cast-iron base. As compared with the ordinary gas furnace it appears almost a toy, owing to its great simplicity.

The casing holds the heat so perfectly that the most refractory substances can be fused with ease, using a common foot-blower. Half a pound of cast iron requires from 7 to 12 minutes for perfect fusion, the time depending on the gas supply and pressure of air from the blower.

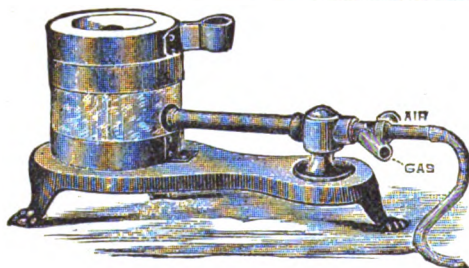
No. 40. Fletcher's New Crucible Furnace, without Blower.....\$3 00  
For Foot Blower's, see Bellows.

Plumbago Crucibles, No. 00, each.....\$20 00

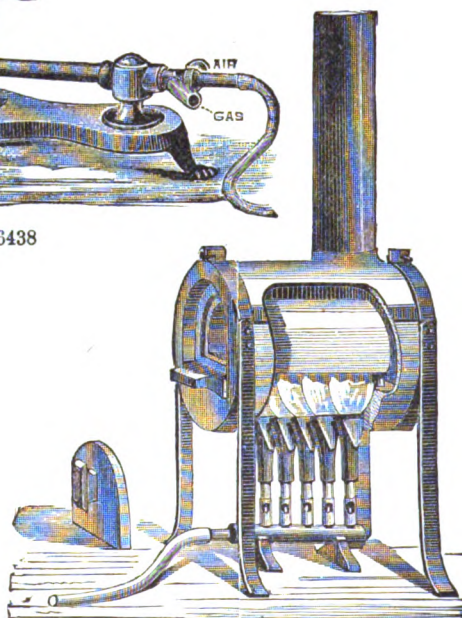
- \* 6438. **Crucible Furnace, with improved Gas Burner.** This burner is made of the same pattern as that used with the "Perfected" Injector Furnace. It is almost noiseless in its action, and works with a small gas supply.  
For Directions see Special List.  
Price, No. 40a, Perfected Burner, without Blower.....\$3 50  
Extra Burner.....1 50
- \* 6439. **Crucible Furnace with improved Burner; for refined petroleum; giving almost as good results as the Gas Furnace.** Price, complete.....\$4 50  
For more particulars and instructions in regard to Fletcher's Furnaces, see our special list.



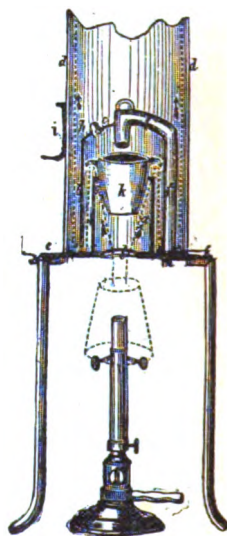
6439



6438



6440



6441

- \* 6440. **Furnace, Muffle, for gas, according to Wiesnegg; with 5 Bunsen's burners of large size with movable top attachment; takes a muffle 6½ in. long, 4½ in. wide and 2 in. high, complete with one muffle.....\$16 00**  
Extra Muffles.....75

(d) for General Laboratory Work.

- \* 6441. **Furnace, according to Hempel; large size, a gas furnace for incineration and oxidation, indispensable for the laboratory, taking R. B. crucibles from No. 0 to 5. A current of fresh air being directly introduced into the crucible; a single Bunsen burner flame will oxidize quicker and safer than any blast.....\$15 00**

6442. Furnace, Blast, Sefstroom's, of heavy sheet iron, the inside box lined with fire-clay, with dome to increase the draft, etc.

Height of the fire-place,	8	12 in.
Diameter " "	7	10 "
	\$20 00	30 00

Furnace, Erdman's, for gas, a clay chimney, with iron tripod, stand..... 50 cts.

Ditto, ditto, with Bunsen's burner..... \$1 25

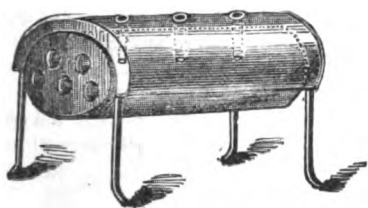
\* 6443. Ditto, after Carius, for 5 tubes, of iron.....\$10 00. Of copper.....\$25 00

○\* 6444. Ditto, " Erlemeyer, for 3 tubes, of iron..... 7 00

○ 6445. Ditto, " " " 4 " " in two rows..... 8 00

○ 6446. Ditto, " " " of iron, extra heavy, tubes horizontal or slanting.....\$15 00

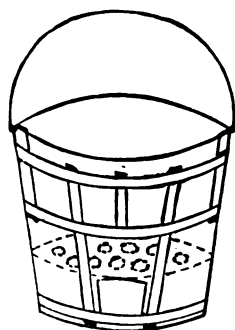
6447. Ditto, for supplying a uniform heat, for making digestions in flasks, etc., according to Kreussler, used for the determination of nitrogen by Kjeihldahl. After removing the top plate the furnace may be used with advantage for heating large apparatus, as water baths, drying ovens, etc. ....\$45 00



6443



6448



6450



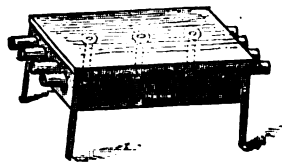
6451



6453a



6453b



6444

6448. No. 14. Perfected Ladle Furnace, with Fletcher's new Solid Flame Heating Burner, for melting lead, tin, zinc, and their alloys. Capacity of burner, 35 ft. per hour. Supply pipe,  $\frac{3}{8}$  inch.

No. 14, Ladle Furnace.....\$3 50

Ladles extra. See there.

6449. Furnace Lining, of best fire-brick, for muffle and other assay furnaces furnished in shortest time at low figures.

Furnace, for combustions; Bunsen's and Liebig's, see Combustion Furnaces.

○\* 6450. Furnace, of clay, for charcoal, portable, each.....\$1 00

\* 6451. Ditto, with lead basin, for etching glass, complete, with burner.....\$2 00  
Other Furnaces for heating at low temperatures, (see Stoves.)

6452. Fusibility Scale of Minerals, Von Kobel's, 6 specimens in box. .... 1 00

\*\* 6453. Gallipots, of white China, straight a, and conical shape b.

$\frac{1}{4}$ oz., per doz.....	25 cts.	2 oz., per doz.....	45 cts.
$\frac{1}{2}$ " " .....	30 "	3 " " .....	50 "
1 " " .....	35 "	4 " " .....	70 "
6 " " .....	90 "		

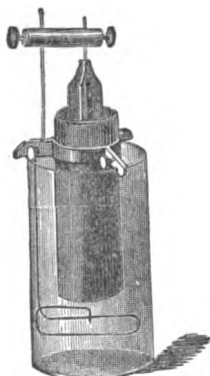
6453c. Ditto, of strong grease proof, grey stone ware.....50% less.

Galvanic Batteries, (see Batteries.)

6454. Galvanometers, hemispherical ..... \$4 00  
 6455. " vertical ..... 6 00  
 ○\* 6456. Galvanoplastic Apparatus, for coating medals, etc., complete ..... \$3 00  
**Gas Analysis Apparatus, Orsat's, etc., (see Apparatus for Gas Analysis.)**

## GASES.

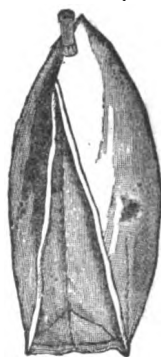
- 6457. Ammonia Gas, liquefied, in Cylinders holding 10 lbs., 60 cts. per lb., cylinders \$8 00 net.  
 — 6458. **Oxygen, compressed, under 225 lb. pressure, in steel cylinders.**  
     Cylinders holding about 12 cub. ft., 15 cub. ft., 20 cub. ft., 25 cub. ft., 50 cub. ft.  
     Per cubic foot ..... 20 cts.  
     25 cents rent is charged per week on each cylinder. 15, 25, 50 cubic feet.  
 ○ 6459. The Cylinders if purchased right out, each ..... \$14.00, \$15.00, \$18.00  
 — 6460. **Hydrogen, Compressed, same as above, per cubic foot.** ..... 5 cts.  
 ○ 6461. **Nitrous Oxide, Liquefied, in small cylinders about  $\frac{1}{2}$  gal.** ..... \$8 00  
     In large cylinders containing about 1 gal; per gal. .... 4½ cts.  
 ○ 6464. **Liquefied Carbonic Acid, in small cylinders, to draw any amount from at liberty, per pound** ..... 35 cts.  
 ○ Cylinders holding 10 lbs., \$10 00; 20 lbs., \$15 00.  
 ○ 6464a. Liquefied Chlorine gas, cylinders of 135 lbs., per lb., 40 cts., cylinders ..... \$40 00  
 — 6464b. Liquefied Sulphur dioxide, in cylinders of 10 lbs., per lb., 45 cts., cylinders \$2 50  
     in cylinders of about 200 lbs., per lb., 20 cts., cylinders ..... \$25 00



6456



6467



6470

- 6465. Apparatus for Liquefying and Solidifying Carbonic Acid Gas, etc., according to Natterer, with 2 flasks standing a pressure of over 130 atmospheres; see Müller-Pouillet, II, 2 fig. 156. Price ..... \$275 00  
 — 6466. Ditto, ditto, according to Thiloriers ..... 175 00  
 — \* 6467. **Gas Bags, of rubber, best make, oval.**  
     Capacity, 1 2 3 4 5 6 8 10 gallons.  
     Each, \$1 25 1 75 2 00 2 50 2 75 3 00 4 00 5 00  
     6468. Ditto, ditto, with socket and stop-cock, extra ..... \$1 25  
     6469. Ditto, ditto, with hydrogen jet in addition, extra ..... 55 to 75 cts.  
 — \* 6470. Ditto, ditto, of vulcanized rubber, square.  
     18x24 inches, contents, 15 gals. .... \$ 7 25  
     20x22 " " 25 " ..... 9 25  
     24x30 " " 35 " ..... 11 25  
     30x40 " " 55 " ..... 14 00  
 6471. Ditto, ditto, with socket and stop-cock, extra ..... 1 50

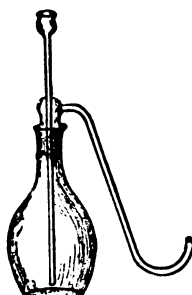
- \* 6472. Gas Bottles, stout, for gas evolutions, German or Bohemian glass.
- |       | $\frac{1}{2}$ pint, | $\frac{1}{2}$ pint, | 1 pint, | 1 quart, | $\frac{1}{2}$ gal. | 1 gal. | 2 gal. |
|-------|---------------------|---------------------|---------|----------|--------------------|--------|--------|
| Each, | .15                 | .20                 | .25     | .35      | .50                | .75    | \$1 00 |
- \* 6473. Ditto, ditto, stout German glass, fitted with rubber stopper, funnel and delivering tube.
- |       | $\frac{1}{2}$ pint, | $\frac{1}{2}$ pint, | 1 pint, | 1 quart, | $\frac{1}{2}$ gal. |
|-------|---------------------|---------------------|---------|----------|--------------------|
| Each, | .45                 | .50                 | .60     | .75      | 1.00               |
- \* 6474. Ditto, ditto, with the funnel tube and delivery tube or straight connection ground into the neck.
- | Capacity, | 8 oz.  | 16 oz. | 1 qt.      |
|-----------|--------|--------|------------|
| Price,    | \$1 00 | 1 25   | 1 50 each. |
- \* 6475. Ditto, ditto, Vogel's.
- |  | 8 oz. | Pint | Quart, |
|--|-------|------|--------|
|  | .70   | .80  | 1 00   |

Gas Burners, (see Burners).

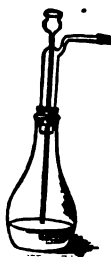
Gas Furnaces and Stoves, (see there).



6473



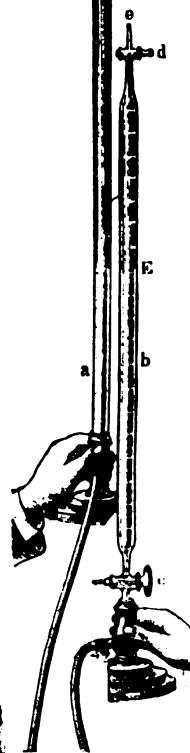
6474



6475



6476



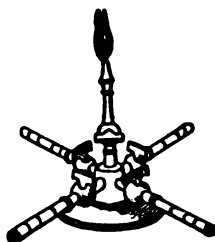
6477



6472



6480



6481

\* 6476. Gas Burettes, Hempel's, for gas analysis. Set of 2, in wooden bases....\$5 00

\* 6477. Ditto, ditto, set of 2, with glass stop-cocks..... 7 50

Ditto, ditto, Dr. Cl. Winkler's, Elliot's Burette, Azotometers, etc., See Apparatus for Gas Analysis.

6478. Gas collecting tubes with stop-cocks at each end, capacity about 250 CC..... 3 00

6479. Gas Distributors, to burn 3 Bunsen's Burners, or 3 stoves, from one gas pipe, without stop-cocks, each.....\$2 00

\* 6480. With 3 stop-cocks..... 3 00

\* 6481. " " " and centre light, very superior..... \$4 00 and 5 00

Gas Generator, Kipp's, for sulphuret of hydrogen, (see page 26, figure 5215.)

- \* 6482. Gas Generator and Washing Bottle, of glass, with iron clamp, for washing as well as for generating.

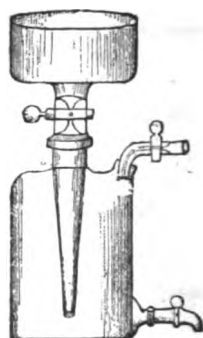
Price, with solid and perforated lids and rubber corks.

$\frac{1}{2}$ pint, each	70 cts
1 " "	70 cts
1 quart "	75 cts
$\frac{1}{2}$ gal. "	85 cts

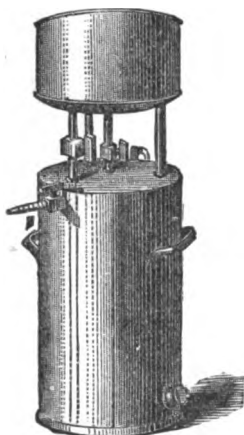
Other Gas Generators, see Apparatus.



6482



6484 a



6483



6485



6486

- \* 6483. Gas Holder, after Berzelius, improved by Pepy.

Capacity,	5 gallons,	10 gallons,
Made of copper,	\$20 00	25 00
Made of Zinc,	15 00	17 50

6484. Ditto, ditto, with sliding receivers; of galvanized iron, or zinc, set of 2, for oxygen and hydrogen; mounted in frame with pulleys, capacity 20 gallons each, complete. Price.....\$75 00 Each single..... 40 00

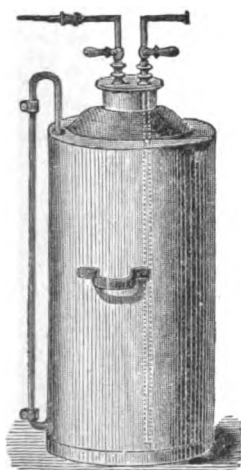
- \* 6484a. Ditto, ditto, Berzelius, the whole of glass, with 3 stop-cocks.

Capacity,	2	4	8 quarts,
Price,	\$8 00	9 00	12 00

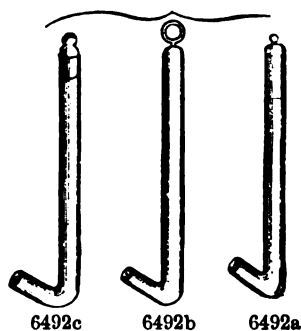
- \* 6485. Ditto, ditto, Mitscherlich's, made entirely of glass, with fittings of brass, capacity, 3 gallons..... \$20 00

- \* 6486. Ditto, ditto, all glass, with brass fittings. Contents; 4 gallons.....\$17 50

- |  |                                      |             |
|--|--------------------------------------|-------------|
| * 6487. Gas Holder, of copper, very substantial,   | 5 gallons,                           | 10 gallons, |
|  | \$18 00                              | 23 00       |
| 6487a. Ditto, ditto, of zinc,  | 14 00                                | 16 50       |
| Gas Generators, (see also Apparatus for Generating Gases, pages 10-15.)  |                                      |             |
| Gas Jars, (see Bell Glasses and Cylinders.) Gas Jets, for hydrogen, see Jets.                                    |                                      |             |
| Gasogenes, for making carbonic acid water, French, made of glass, wire or reed covered, see Apparatus, No. 5104. |                                      |             |
| * 6488. Gas Combustion Tube, with sealed-in palladium wires.....   |                                      | \$2 50      |
| * 6488a. Gasometer Tubes, with glass stop-cock on top, 100 CC. in 1-5.....                                       |                                      | 2 75        |
| Ditto, ditto, ditto, " " " " 50 CC. in 1-10.....   |                                      | 2 25        |
| * 6488b. Gasometer or Gas measuring Tubes, sealed at one end and divided in                                      |                                      |             |
|  | 25 50 100 100 150 200 300 cub. cent. |             |
| Graduated in   | 1-5 1-5 1-1 1-5 1-1 1-1 1-1          |             |
| Each,  | \$ .75 1 00 1 40 1 75 1 40 1 60 2 50 |             |



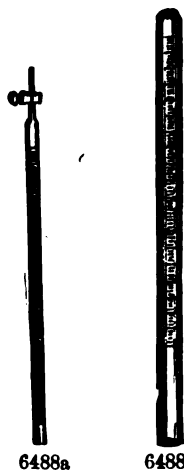
6487



6492c

6492b

6492a



6488a

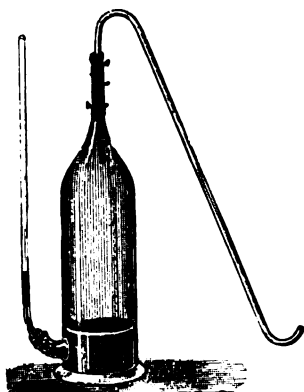
6488b



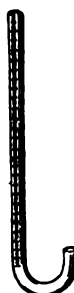
6488



6491



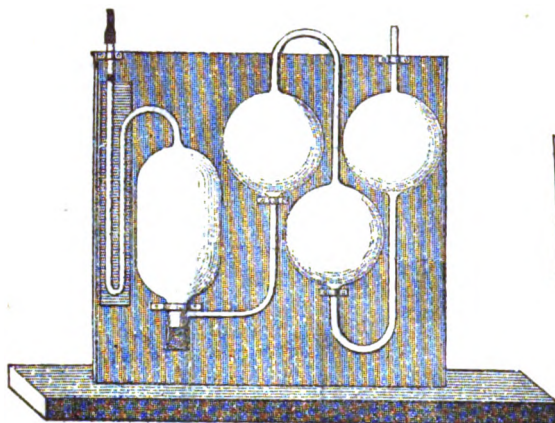
6494



6493

- |         |  |                                   |            |
|---------|--|-----------------------------------|------------|
| 6489.   | Ditto, ditto, divided in cubic inches.   | 6 cubic inches in 1-16.           | \$1 30     |
|         | In 1-100   |                                   | 2 00       |
| 6490.   | Ditto, ditto, 3 cubic inches in 1-16.  |                                   | 85         |
|         | In 1-100   |                                   | 1 50       |
| * 6491. | Ditto, ditto, ditto, U shape, 50 in $\frac{1}{2}$ , with platina wires.        |                                   | 2 50       |
| * 6492. | Ditto, ditto, Crook's  | a, 25 cts., b, 35 cts. c, 50 cts. |            |
|         | For other Gas measuring tubes, see Eudiometers and Apparatus for Gas Analysis. |                                   |            |
| * 6493. | Ditto, ditto, for quantitative determination of Co, in illuminating gas.       |                                   | \$1 50     |
| * 6494. | Ditto, Bunsen's, Mercury, graduated in mm.                                     |                                   |            |
|         | Capacity,  | 250 CC.                           | 500 CC.    |
|         | Plain,   | 2 00                              | 2 50 each. |
|         | With glass stop-cock,  | 2 75                              | 3 50 "     |

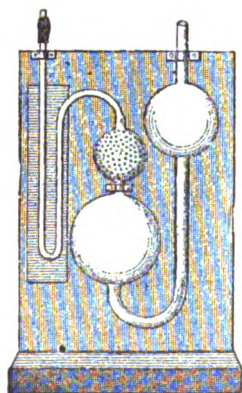
6495. Gas Pipettes, Hempel's, for absorption of gases, compound .....	\$2 00	
Mounted .....	3 75	
* 6496. Ditto, ditto, " " " for solids .....	\$2 25.	Mounted. \$4 00
6497. Ditto, ditto, " " " plain .....	1 00.	" .. 2 50
6498. Ditto, ditto, " " " plain for solids ..	1 25.	" .. 2 75
* 6499. Ditto, ditto, plain Pipette with beads .....	1 75.	" .. 3 00
6500. Ditto, ditto, Hempel's, explosion .....	3 00.	" .. 5 00
* 6501. Gas Explosion Pipette, new form, according to Dr. W. Hempel, with support Price .....		\$6 50



6496



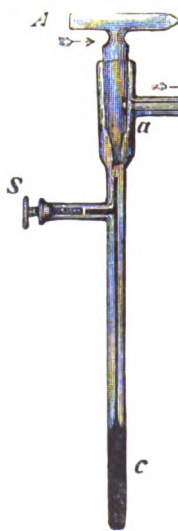
6502



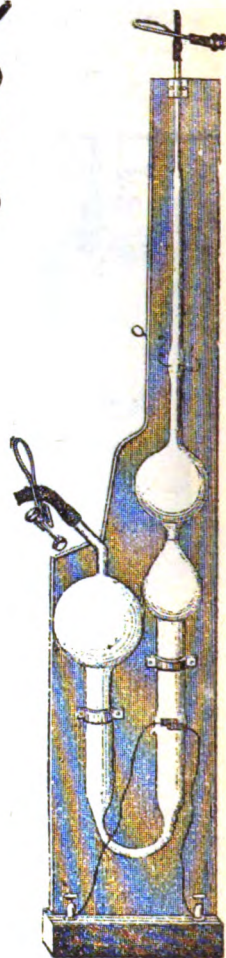
6499



6503



6506



6501

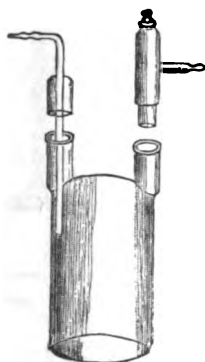
- \* 6502. Gas Pipette, according to Doyere .....
- \* 6503. Ditto, ditto, according to Ettling. a, small size .....
- b, large size .....
- 6504. Gas Power Engine, working model of; according to Otto Langen's system.  
Price, ..... one-half horse power, \$100 00. One horse power, \$200 00
- 6505. Larger engines, 2-12 horse power, of the N. Y. Safety Steam Power Co., price  
from \$100 00 to \$500 00, furnished to order.
- \* 6506. Gas Regulator, Temperature Regulator or Thermostat, according to  
Reichert, almost entirely of glass, will regulate to  $\frac{1}{2}$  of 1 degree, being shape,  
and about size of thermometer, it fits  $\frac{1}{2}$ -inch hole .....
- 6506a. Ditto, ditto, for low temperatures .....



6507. Gas Regulator, Lothar Meyer's modification, all glass..... 1 50
- \* 6508. Ditto, ditto, according to Bunsen and Kemp; for keeping a hot air bath, etc., at a constant temperature.....\$2 25
6509. Ditto, ditto, in metal frame.....3 50
- \* 6510. Gas Washing Bottle, according to Avez; two sizes.  
Capacity, 250 CC.....\$1 00. 500 CC.....\$1 25
- \* 6511. Gas Washing and Absorbing Bottle, according to Winkler, for the estimation of Ammonia in coal gas, capacity, 250 CC., complete.....\$2 25
- \* 6512. Gas Washing Bottle, double acting, according to F. Alhlm.  
Capacity, 250 500 1,000 2000 CC.  
Price, \$1 50 2 00 2 25 each. 3 00
- \* 6512a. Improved by Greiner and Friedrichs; for solid and liquid absorbing substances. Capacity, 8 oz. 16 oz. 32 oz.  
Price, \$2 00 \$2 75 3 75
- \* 6513. Gas Washing Funnel, according to Kemp, two sizes. 100 CC.....60 cts.  
200 CC.....\$1 00



6508



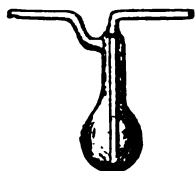
6511



6512



6518



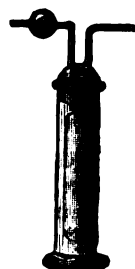
6510



6512a



6513



6514



6515

- \* 6514. Gas Washing Jar (Cylinder); according to Muenke, capacity 200 c.m..... 1 75
- \* 6515. Gauges, vacuum for air-pumps, with mercury column, brass cap and brass stop-cock. Small.....\$3 50. Large.....5 00 to \$6 00
6516. Ditto, entirely enclosed in glass tube, no brass cap..... 3 50 to 5 00
6517. Ditto, ditto, not enclosed, on card-board scale..... 2 50
- \* 6518. Ditto, Spring, indicating vacuum.

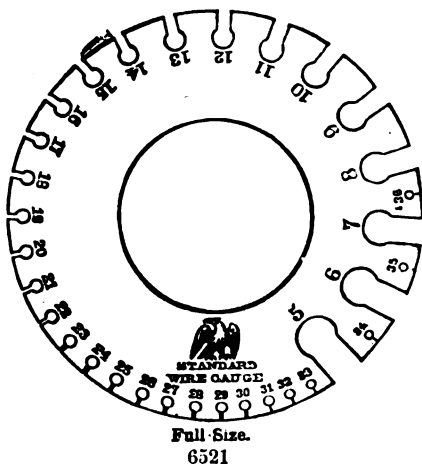
3 in.	4 in.	5 in.	6 in.
\$5 00	6 00	8 00	10 00

- 6519. Ditto, ditto, indicating pressure.

3 in.	4 in.	5 in.	6 in.
\$5 00	6 00	8 00	10 00

- 6519a. Gauge glasses,  
Diameter,  $\frac{1}{4}$  inch, 10 15 20 in.  
"  $\frac{1}{2}$  inch, \$1 50 2 40 3 00 dozen  
"  $\frac{3}{4}$  inch, \$1 60 2 50 3 20 dozen

- \* 6520. Gauges, Micrometer, Brown and Sharp's, indicating 1-1000 inch,  $\frac{1}{1000}$  one-thousandth is obtained .....\$5 00. Case..... 50 cts. extra.  
Ditto, ditto, in fractions of millimeters.....\$5 00. Case..... 50 cts. extra.
- \* 6521. Ditto, for wire, American standard, round, 5 to 36.....\$2 50
6522. Gauze, of iron, 4 in. square ..... 5 cts. By the foot..... 30 cts.
6523. Ditto, of brass, 4 " " ..... 10 " Per square foot ..... 50 cts.
- 6524. Ditto, of copper coarse, for organic analysis..... 90 cts.
- 6525. Ditto, ditto, fine, No. 80, per square foot.....\$1 20
- \* 6526. Geissler's Tubes, plain tubes, 6 inches long. (See also Supplement. Cat.) 60 cts.
6527. Same, with bulbs or tube of uranium glass.....\$1 00 to 3 60
- Any special shape or larger sizes blown to order at reasonable rates.
6528. Generator, for hydrogen, according to Professor Morton, capacity of 6 gallons; will run a pair of lanterns, etc., continuously for six hours, complete, with wash bottle, stop-cock and charge of zinc.....\$35 00
- Other generators, see Apparatus and Gas Generators.
- \* 6529. Glass Balls, of thin glass, with a hook to support anatomical preparations in alcohol, Small, .10 to..... 25 cts  
Large, .50 cts., to .....\$1 00
- Glass Drops or Batavian Tears, see Rupert's Drops.
- Glass Blower's Lamp, (see Blast Lamps.)
- Glass Blower's Tables, (see Blast Tables.)



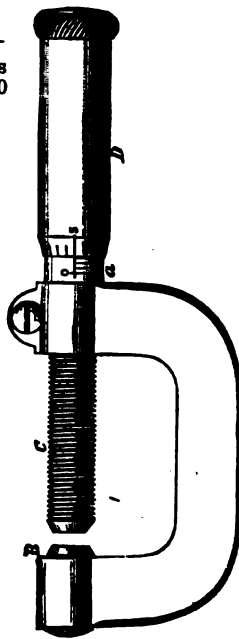
6521



6529



6526



6520

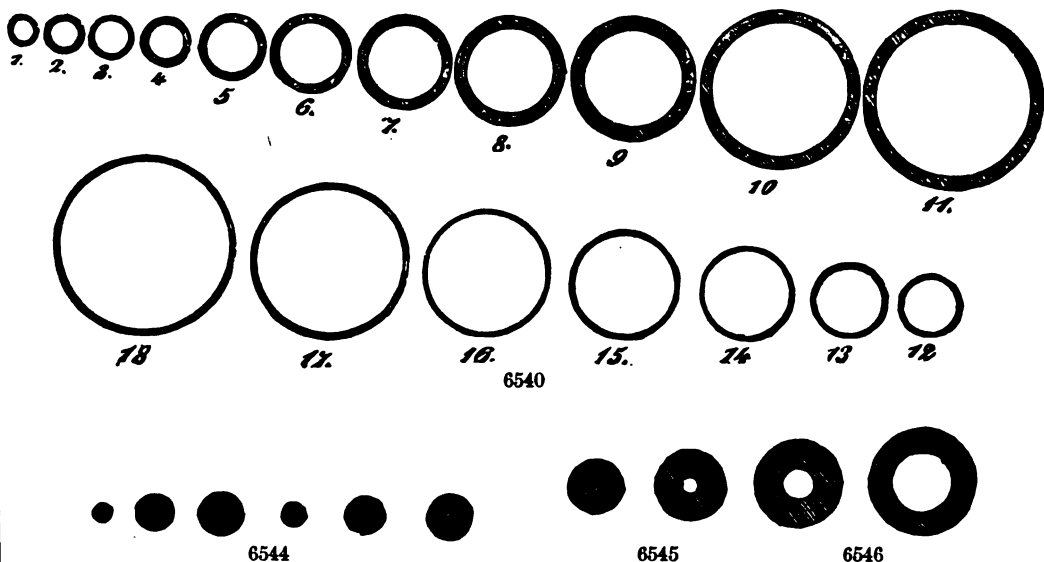
6530. Glass Ends, for Burettes, each..... .5 cts. Doz., 30 cts.
6531. Ditto, ditto, ditto, with rubber and Mohr's pinch-cock..... 20 cts.
6532. Glass Pearls, Beads, from 2 to 5 millimeters diameter, used as surface extending medium, in absorbing and drying gases, etc., per pound.....\$ .75 to 1 00
6533. Glass Plates, of blue colored glass.
- |  | 2x3 in. | 2x4 in. | 3x4 in. | 4x4 in. |
|--|---------|---------|---------|---------|
|  | .08     | .10     | .10     | .10     |
6534. Ditto, ditto, of flint glass, rough on one side, for covering jars, etc.
- |  | 2  | 2½ | 3  | 4  | 5  | 6   | 7   | 8   | 9   | 10  | 12  | 15 in square. |
|--|----|----|----|----|----|-----|-----|-----|-----|-----|-----|---------------|
|  | .3 | .4 | .5 | .6 | .8 | .10 | .12 | .15 | .20 | .25 | .30 | .40 cts.      |
6535. Ditto, ditto, of heavy French plate glass, ground rough on one side.
- |  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 12   | 15   | 20 in. square |
|--|-----|-----|-----|-----|-----|-----|-----|-----|------|------|---------------|
|  | .15 | .20 | .25 | .30 | .35 | .40 | .50 | .80 | 1 00 | 1 60 | 2 50          |
6536. Glass Powder, per pound..... 10 cts.
6537. Glass Rods, in six feet lengths, per pound..... 50 cts.
6539. Ditto, ditto, of American glass, per pound..... 50 cts.
6539. Glass Stirrers, of German glass, all sizes, one end round, the other pointed, per pound..... 60 cts.

## GLASS TUBING.

(Jena glass see page 378-379.)

To receive the correct size of glass tubing it is always desirable to send a sample, otherwise give exact outside and inside measurements in millimeters. **ALL SIZES KEPT IN STOCK.**

- \* 6540. Glass Tubing, of best German glass, the only suitable glass for glass-blowing, setting up apparatus or making connections, being strong and elastic, per pound..... (blue line, white back, lb. \$1.25) ..... 50 cts.  
Above 1 in. bore, per pound... 60 cts..... above 2 inch 75 cts.  
6541. Ditto, ditto, of American glass, per pound..... 50 cts.  
6542. Combustion Tubing, this is from the famous manufacture of Jos. Kavalier, Bohemia, whose only agents we are in this country, and the only combustion tubing which gives universal satisfaction, and the only one recommended by European authorities. Price per pound..... 75 cts.  
6543. Ditto, ditto, ditto, small sizes, for Marsh's tests, matrasses and blow-piping.. \$1 00



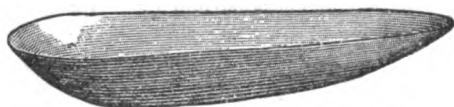
- \* 6544. Ditto ditto, for thermometers, in all sizes... 90 cts. White back, German... 1 20  
6544a. Ditto, ditto, front lens, per lb..... \$1 50  
\* 6545. Ditto, ditto, for barometers, with different bores, per pound..... 75 cts.  
\* 6546. Ditto, Tubes, extra stout, for pressure gauges, per lb..... 75 cts.  
6547. Ditto, ditto, of best imported glass, for steam boilers, etc., etc., cut to any length required, per lb..... \$1 00  
6548. Glass Wool, of Bohemian glass, the best material for acid filtration, it is indispensable for many chemical operations.  
Fine, oz..... \$ .85, lb., 10 00. Coarse, oz..... 70 cts., lb., \$8 00  
— 6549. Glue Kettles,  
No. 00 0 1 2 3 4 5 6  
Capacity,  $\frac{1}{2}$  pt. Pt.  $1\frac{1}{2}$  pt. Qt. 3 pts.  $\frac{1}{2}$  gal 6 pts. 1 gal.  
.45 .50 .60 .70 .90 1 00 1 40 1 50  
O 6549a. Glucose Filter Tubes, with platina plates, each..... 30 cts.

- \* 6550. **Gold Pans**, Miner's washing pans.  
 16 in. plain iron, Polished iron, Russian iron, Agateware, 10 in. "enameled Bataca"  
                   .70                   .85                   \$1 10                   1 25                   75 cts.
- \* 6550a. Gold washing horns, as used in Mexico, each ..... 75 cts.
6551. **Goldbeater's Skin**, 6 in. □ ..... doz. 50 cts.
- \* 6552. **Goniometer**, for measuring the angles of crystals, according to Hauy, with  
 movable arms, in case ..... \$10 00
6553. Ditto, ditto, reflecting. .... \$50 00 and 75 00
6554. Ditto, ditto, ditto, same, small, portable according to Wollaston ..... \$30 00

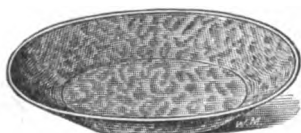
## GRADUATES.

- \* 6555. **Graduates of Glass**, graduated all around.

	1 dram,	2	½ oz.	1 oz.	2	3	4	6	8	12	16	24	32
Piece,	.25	.28	.20	.20	.25	.28	.30	.35	.40	.55	.65	.80	1 00
Doz.	\$2 50	2 80	1 60	1 60	1 90	2 15	2 70	3 20	4 00	5 40	6 50	8 00	11 00



6550a



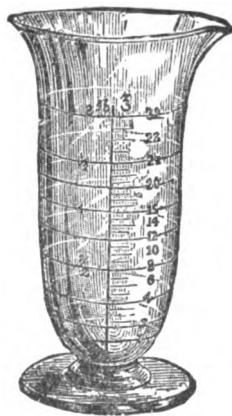
6550



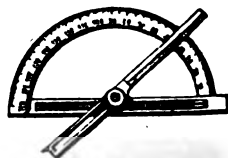
6556



6558



6555



6552



6559

- \* 6556. Ditto, ditto, German, divided in grammes.

	25	50	100	150	200	250	500	1000 grms. or C
Piece,	.35	.45	.55	.70	.80	.90	\$1 20	1 80

- 6557. Ditto, ditto, divided in grammes on one side and ounces on the other.

	1	2	4	8	16	32 ounces.
	30	50	100	250	500	1,000 grammes.
	.30	.45	.60	\$ .90	1 30	2 20

- \* 6558. Ditto, ditto, porcelain, conical or cylindrical, German.

	1	2	4	8	12	16	24	32 ounces.
Piece,	.25	.28	.30	.55	.80	\$1 00	1 20	1 50

- \* 6559. Ditto, ditto, fine metal, (tin.)

	1	2	4	6	8	10	12	16	24 ounces.
Piece,	.50	.70	.90	\$1 10	1 35	1 55	1 75	2 00	2 40

Gramme Bottles, see Bottles for Specific Gravity.

## ○\* 6559a. Grind Stones, in round box.

Diameter,	6 in.	8 in.	10 in.
	.80	\$1 15	1 50

## ○\* 6560. Ditto, ditto, in square box.

Diameter,	12 in.	15 in.	18 in.
	\$3 50	4 50	5 00

6560a. Gutta Percha tissue, oz ..... 25 cts.

## HAMMERS.

Our hammers are of the best steel and are highly finished. If ordered unpolished 10 per cent. less.

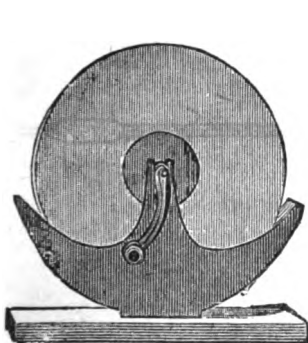
6560b. Hammers, of best English steel, for blow-piping, Plattner's, each ..... 60 cts.

6560c. Ditto, ditto, with wire handle, Colton's ..... 75 cts.

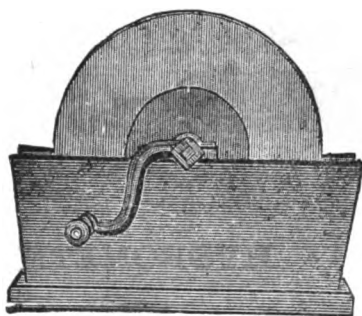
6561. Ditto, ditto, with steel anvil, each ..... \$1 20

\*\* 6562. Ditto, mineralogical, sharpened on both ends, for trimming. Style a or b.

Weight about,	11 oz.	1½ lb.
	\$1 00	1 25



6559a



6560



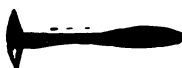
6565



6564-2



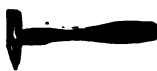
6564-1



6562a



6562b



6563a



6563b



6564a

\*\* 6563. Ditto, ditto, according to Dana, a and b.

Face,	¾ in.	1 in.	1½ in.	1½ in.
Weight about,	11 oz.	1 1-16 lb.	2 3-16 lb.	3 3-16 lb.
	\$1 20	1 50	2 50	3 50

\* 6564. Ditto, for prospectors, so-called Poll picks, with 3 ft. long handles, fig. 1 or 2. \$2 50

\* 6564a. Ditto, ditto, polished, and heavier steel, 1½ to 1¾ inch, European pattern, hammer and pick combined, weight, 1½ lb ..... \$2 00

\* 6565. Ditto, ditto, according to Maynard.

Face,	1 in.	1½ in.
Weight,	1¾ lb.	2 ½ lb.
Price,	\$1 50	2 25

**6566. Handles for Files and Tools.**

	Small,	Medium,	Large,
	.5	.8	.10
— 6567. Ditto, ditto, finely finished, each	.10	.12	.15
6568. <b>Hardness' Scale</b> , of Minerals, 9 specimens, (except diamond).....			\$2 00
6569. Ditto, ditto, 10 specimens, (diamond included).....			5 50

**Hatchets**, according to size, at market price.

\* 6570.  **HOLDERS**, for platinum wire, of improved make, the hard rubber handle arranged as a reservoir for platina wire, each.....80 cts.

6571. Ditto, ditto, with 4 wires.....\$1 00

6571a. **Hour Glasses**, on stand, correct make.

	2	5	10 minutes.
	.45	.60	.75 cts.

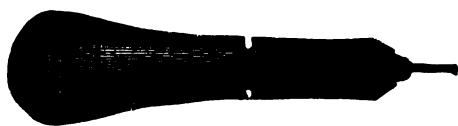
6571b. **Hydraulic Press**, for illustrating the principle. Small, form.....\$25 00  
Large, elaborated.....\$100 00

See also supplementary List for Hydraulics, Hydrodynamics, etc.

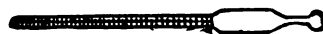
6572. **Holder**, of wood, for holding platinum spoon.....50 cts.

**Homœopathic Vials**, see Bottles. **Horn Spoons**, see Spoons. **Scoops**, see Scoops. **Spatulas**, see Spatulas.

**Hydrogen Jets**, (see Jets.) **Hydrogen Lamp**, Doebereiner's, (see Doeber  
einer's Lamps.)



6570



6573

## HYDROMETERS.




**It has become necessary in addition to manufacturing the ordinary quality to produce a standard quality for scientific investigations, therefore we quote both.**

### a, Hydrometers, for liquids lighter than water.

	For Factory use.	For Scientific use.
* 6573. <b>Beaumé and Specific Gravity</b> , 0,70 to 1,000.....	\$ .75	\$ 1 00
6574. Ditto, ditto, with thermometer.....	1 25	1 75
6575. Ditto, ditto, 0,70 to 0,80; 0,80 to 0,90; 0,90 to 1,000, each.....	.75	1 00
6577. Ditto, ditto, half of usual length.....	.75	1 00
6578. Ditto, Ditto, 0,70 to 0,85, 0,85 to 1,000 each.....	.75	1 00

### b, Hydrometers, for liquids heavier than water.

6579. <b>Beaumé and Specific Gravity</b> , 1,000 to 2,000 .....	.75	1 00
6580. Ditto, ditto, with thermometer .....	1 25	1 75
6581. <b>Hydrometers</b> , 1,000 to 1,200, 1,200 to 1,400, 1,400 to 1,600, 1,600 to 1,800, 1,800 to 2,000, each.....	.75	1 00
6582. Ditto, half of usual length.....	.75	1 00
6583. Ditto, 1,000 to 1,400, 1,400 to 2,000, each.....	.75	1 00
6584. Ditto, complete set, three for light liquids and five for heavy liquids		7 50
6584a. Ditto, ditto, in lined case, with thermometer and cylinder.....		15 00

	Ordinary Standard Quality. Quality.	
— 6585. Hydrometers, in lined case, with cylinder, 2 hydrometers, one for light and one for heavy liquids.....	\$6 00	
— 6586. Hydrometers, in case, with cylinder, two hydrometers, two for light or two for heavy liquids.....	6 00	
6587. Hydrometers, 0,700 to 2,000, set of three, one for light and two for heavy liquids, each with fine thermometer in the stem, and cylinder in lined case.....	12 00	
6588. Hydrometer, Universal form, 0,700 to 2,000.....	1 75	
6589. Hydrometers, for acids, 0,50 or 0,70, each.....	.50	.75
* 6590. Hydrometers, for alcohol and spirits, Tralles and proof scale....	.50	.75
* 6591. Ditto, ditto, with thermometer, U. S. Custom House standard.....	1 25	1 75
○ 6592. Ditto, ditto, in chamois-lined case, with cylinder.....		4 50
6593. Ditto, ditto, Tralles and Richter, volume and weight, per cent ...		1 75
6594. Ditto, ditto, in lined case, with cylinder.....		4 50
6595. Hydrometer, Gay Lussac, for alcohol .....		.75
6600. Ditto, ditto, with thermometer.....		1 75
6601. Hydrometers, for sugar and syrup, 0 to 50° B.....	.50	.75
6602. Hydrometers, for sugar, Brix's scale, set of three, in half degrees, 0 to 30, 30 to 60, 60 to 90, .....	3 00	5 00
6603. Ditto, ditto, with thermometers.....	7 50	9 00
Scheibler's		
		
6590		
		
6591		
		
6620		
6604. Hydrometers, Brix's, ditto, set of three, in 1-5ths.....	4 00	9 50
6605. Ditto, ditto, with thermometers,—5 to +30, 25 to 60, 55 to 85°..	9 00	12 00
6606. Ditto, Brix's, 0° to 100°, 20 in set, each reading 5° in 1-20th....		2 50
6607. Ditto, ditto, 0° to 100°, 10 in set, each reading 10° in 1-10th....		1 25
6608. Ditto, ditto, ditto, with thermometer. ....	3 00	4 00
6609. Ditto, ditto, normal, set with thermometers in stem, from —5 to +85 in 1-5th degrees, in chamois-lined case, with cylinder, complete,		15 00
6610. Ditto, ditto, sweet water, —5 to +5 in 1-10th.....		2 00
6611. Ditto, ditto, for hot syrup, of metal, 0 to 50° B.....		5 00
6612. Hydrometers, for milk, (lactometers) Board of Health standard.....	.50	
6613. Ditto, ditto, with thermometer, Board of Health or Quevennes,		2 00
6614. Ditto, ditto, Quevennes.....		1 00
6615. Ditto, ditto, "Milk assayer".....	.50	
6616. Ditto, ditto, for ammonia.....	.50	
6617. Ditto, Beaumé's, for acid, American standard, 0 to 70°.....	.50	.75
6618. Ditto, ditto, 0 to 50°.....	.50	.75
6619. Ditto, Balling's, for beer and wort.....		.50
* 6620. Ditto, ditto, with thermometer.....		1 75
6621. Ditto, for ether.....	.75	
6622. Ditto, for ether, with thermometer.....	1 85	
6623. Ditto, Kaiser's, plain, for beer and wort.....	.50	
6624. Ditto, for vinegar, acetometer.....	.50	
6625. Ditto, for alkali, Beaumé's, scale.....	.50	
6626. Ditto, ditto, chlorine (Bleach Hydrometer).....	.50	
6627. Ditto, ditto, oils, fatty, with thermometer, \$2 50.....	1 00	
6628. Ditto, for bark liquid, (Tannometers.....	.50	
6629. Ditto, with thermometer.....	1 75	
6630. Ditto, cider.....	.50	
6630a. Ditto, Edison's, for zinc solution.....	1 50	
Scheibler's		

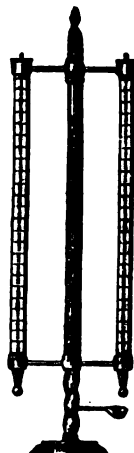
	Ordinary Quality.	Standard Quality.
6631. Hydrometers, for coal oil.....	\$0.50	
6632. Ditto, ditto, with thermometer.....		\$1 75
6633. Ditto, Oechsle's, for wine and must, (Vinometer).....	.75	
6634. Ditto, for salt solutions, in box, (Sallimeter).....	.50	
6635. Ditto, for silver solution, in box.....	.65	
6636. Ditto, for sugar, (Saccharometer) in box.....	.50	
6637. Ditto, ditto, Ventzkes, sweet water spindle.....	1 00	
* 6638. Ditto, for urine, (urinometer), cylinder included, ranging 1,000 to 1,060, small.....	.50	
6639. Ditto, ditto, standard.....		.60
6640. Ditto, ditto, ranging 1,000 to 1,040, Vogel & Neubauer's.....		.60
6641. Ditto, ditto, ranging 1,000 to 1,030, " ".....		.60
6642. Ditto, ditto, ranging 1,030 to 1,060 " ".....		.60
6643. The two latter making a set, if taken together.....		1 00
6644. Ditto, ditto, for urine, (urinometer), with thermometer attached to the urinometer, cylinder included, 1,000 to 1,060.....		1 60
6645. Ditto, 1,000 to 1,030.....		1 60
6646. Ditto, 1,030 to 1,060.....		1 60
6647. Ditto, set of two.....		2 75
6647a. Ditto, for batteries.....	.50	



6638



6648-6649

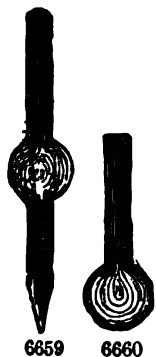


6653

- \* 6648. Ditto, for urine, according to Dr. Squibb, improved by E. & A., with table of corrections, with cylinder, in box..... 1 00
- \* 6649. With thermometer..... 2 00
6650. Hydrometer, Twaddle's, for liquids heavier than water, the degrees marked on the scale, multiplied by 5 and added to 1,000 gives the specific gravity.
- |            |                   |     |      |
|------------|-------------------|-----|------|
| No. 1..... | 0° to 26°.....    | .60 | 1 00 |
| 2.....     | 24° to 48°.....   | .60 | 1 00 |
| 3.....     | 48° to 72°.....   | .60 | 1 00 |
| 4.....     | 72° to 102°.....  | .60 | 1 00 |
| 5.....     | 102° to 134°..... | .60 | 1 00 |
| 6.....     | 134° to 160°..... | .60 | 1 00 |
6651. Ditto, ditto, set of six, small size, in leather case, standard, complete. .... 6 50
- Ditto, Nichols, (see areometer, page 42 )
- Hydrometer Jars, (see Cylinders Lipped.)**
6652. Hydrostatic Balance, with beam, pans and column of brass..... \$12 50
- See also Balances for taking specific gravity.
- \* 6653. Hygrometer, August's, 2 milk glass scale Thermometers, 20 to + 40° C in 1/10, on stand with porcelain base, for estimating moisture..... 12 00

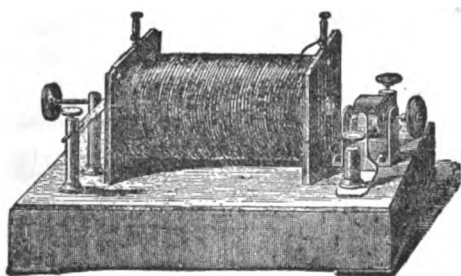


- 6654. Hygrometer, Mason's plain.....\$2 50  
 — 6655. Ditto, Masons, Hicks' make..... 5 00  
 \* 6656. Ditto, Mitthoff's, round, German, small..... 2 25  
 \* 6657. Ditto, ditto, ditto, medium..... 7 50 Large..... 9 00  
 \* 6658. Ditto, ditto, watch form, in case..... 9 50  
 ~\* 6658a. Ice Machine System, Wegelin and Hübner's, Ice produced by evaporation of ammonia, very simple, one filling will last for years of continuous use, everybody can handle it. Complete with furnace and water tank.  
 Machine No. 2 furnishes 4 lbs. of ice every 3 hours, price, wrought iron.... \$150 00  
 Rivetted..... 130 00  
 Machine No. 4 furnishes 8 lbs. of ice every 5 hours, price, wrought iron.... 190 00  
 Rivetted ..... 170 00

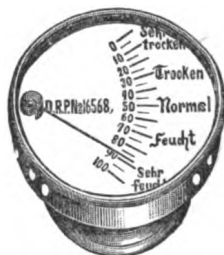


6659

6660



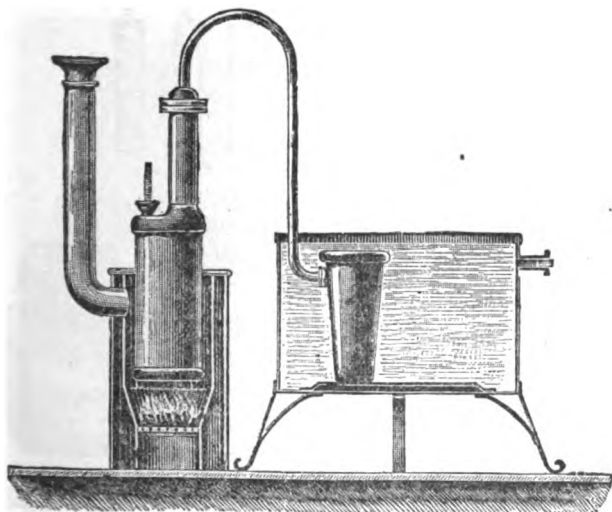
6661



6656



6657



6658a



6658

- \* 6659. Ignition Bulb Tubes, hardest Bohemian glass. 5 in. 6 in.  
 .20 .25 cts.  
 \* 6660. Ditto, ditto, ditto, " " " " .15 .20 cts.  
 \* 6661. Induction or Ruhmkorff Coil, with commutator and automatic break; on polished mahogany base, with condenser and pole changer.  
 Giving About  $\frac{1}{2}$  5.00 8.00 9.80 14.50 17.50 22.00 27.00 32.00 40.00 50.00 2 in. spark.  
 Price, \$3.80 5.00 8.00 9.80 14.50 17.50 22.00 27.00 32.00 40.00 50.00  
 3 4 5 6 8 in. spark.  
 70.00 85.00 100.00 140.00 190.00

6662. Induction Wires, according to quality and insulating coat, from 1 cent to 20 cents. For sizes, see Wires.

**Infusion Pot, of agate ware, with agate covers. See Jars for Infusion.**  
**6663. Ditto, of porcelain, with wooden handle.**

$\frac{1}{2}$ pint,	1 pint,	2 pints,
\$1 00	1 65	2 00

**Influence Machine, see Electric Machine, Holtz's,**  
**Ingot Moulds, (see Moulds.)**

\* **6664. Jacket, of iron, for use with one or several tube burners.**

Small.....50 cts. Medium .....60 cts. Large.....80 cts.

**6665. Jackets, of glass, about 2 inches diameter.**

Length,	12	15	20	25	30 in.
	.75	.90	\$1 20	1 50	1 75 each.

## JARS.

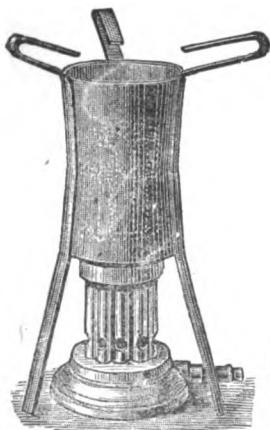
**Jars, anatomical, of new and improved style, see Anatomical Jars.**

\* **6666. Ditto, for Nessler's ammonia test, of colorless glass, with polished bottoms, selected in sets of 2, 3, 6, etc.**

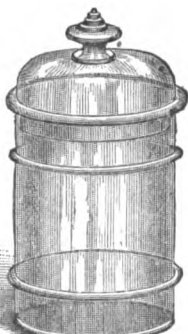
Graduated to 50 CC. 100 CC. 50 and 100 CC. 50, 100 and 150 CC.  
.50 .60 .75 \$1 00

**6666a. Ditto, tall form** 10 CC 25 CC 50 CC.  
.30 .40 .50

**6666b. Ditto, Hehner's form, sets of 2 with stopcocks, per set.....\$4 00**



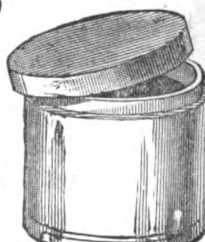
6664



6669



6666



6667



6668

—\* **6667. Jars of glass, with glass cover.**

	$\frac{1}{2}$	1	2	4	8	16 oz.
Doz.	.40	.50	.75	.90	1 70	2 50

—\* **6668. Ditto, of glass, flint or colored glass, with nickel plated cover.**

Capacity,	$\frac{1}{2}$	1	2	4	8	16 oz.
Doz.,	.40	.50	.65	1 00	1 50	2 40

—\* **6669. Ditto, show jars, of glass, large, with glass cover, for powders, etc.**

Height,	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$ gal.	1 gal.	1 $\frac{1}{2}$ gal.	2 gal.
	.40	.50	.65	.75	\$1 00	1 40	1 80

* 6670. Jars, sectional. In three parts.	6½x14½	5½x14½	4½x14½				
	\$2 00	1 60	1 20				
* 6671. Ditto, specie, with japanned tin covers.							
Contents,	½	1 pint	1 quart	½	1	2 gals.	
	.15	.18	.25	.35	.55	.90 cts.	
* 6672. Ditto, inverted for specimens, collections and exhibition of chemicals, seeds, herbs, etc.	½	½	1 pint	1 quart	½	1	2 gal.
	.13	.15	.20	.30	.50	\$1 00	1 50
○* 6673. Jars, white china, with cover, so-called patch boxes.							
Contents,	½	½	1	2	4	8	16 oz.
Per doz.	.70	.80	.90	\$1 00	1 20	1 40	1 60
Per gross,	\$8 00	9 00	10 00	12 00	13 00	15 00	16 00
6674. Ditto, genuine porcelain, with covers, shelf jars, for apothecaries.							
Height,	3½	4½	5½	6½			
Diameter,	2½	3	3½	4 in.			
Capacity,	4	8	16	32 oz.			
Price,	.25	.40	.60	.80 cts.			
6675. Ditto, for infusions, of porcelain, with cover and wooden handle. See Infus. 6663.							



6678



6673



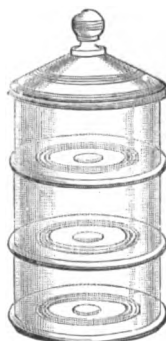
6672



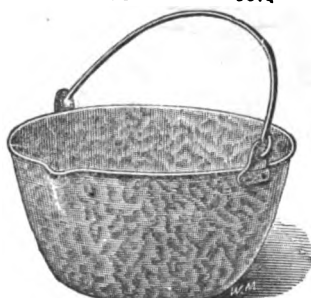
6671



6675a



6670



6680

\* 6675a. Ditto, ditto, of agate ware, with water bath.

Capacity,	quart	3 pints	½ gal.
Price,	.90	1 10	1 50

6676. Ditto, of glazed earthenware, with cover and handles, very useful as slop jars, etc. in the laboratory.

Contents,	1	2	3	5 gallons.
	.40	.65	.80	\$1 00

Jars, graduated, (see Cylinders.) Jars, battery, (see Battery.) Jars, others, (see Cylinders.) Jars for decanting, (see Decanting Jars.)

6677. Jets, of brass, for hydrogen, small.....50 cts.

\* 6678. Ditto, ditto, large.....75 cts.

6679. Ditto, ditto, with stop-cock and socket.....\$1 50 extra.

Kipp's Sulphuret Hydrogen Apparatus, (see Apparatus, Kipp's for Generating.)

\* 6680. Kettles, for evaporation, of agate ware.

	½ gal.	3 qts.	1	2	3	4 gals.
Diameter,	7	8½	9	11½	13	17½ in.
Price,	.35	.50	.60	.90	\$1 25	3 25

- \* 6681. Kettles, for melting Stearin, etc., round or flat bottom, only to order, breadth of rim as desired. Of superior German stoneware.

Capacity,	6	12	20	25	30	38 gallons.
Price,	\$3 75	5 50	7 50	9 25	11 00	13 75 each.
Capacity,	45	50	55	65	70	75 gallons.
Price,	\$16 00	18 50	21 75	25 00	28 00	31 00 each.

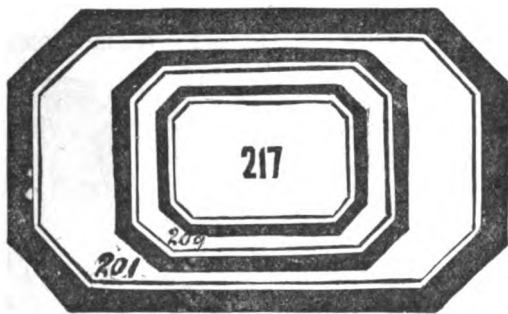
6682. Knives, for cutting corks, etc.....20 cts.

6682a. Ditto, for cutting glass.....75 cts.

## FERROUS SULPHATE



6683



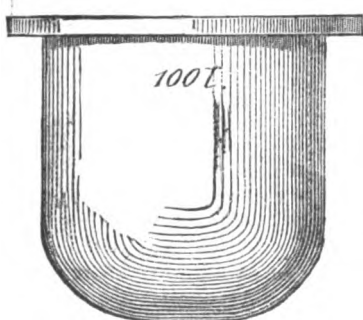
6686a



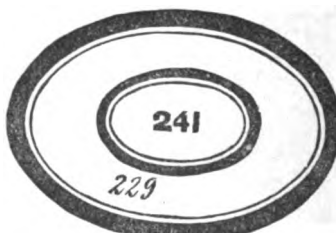
6686d



6686c



6681



6686b



6684

- \* 6683. Label Books, including all the most used chemicals and reagents; good paper, good printing, strip form, with name and latest formula, tables of atomic weights, etc., each book.....40 cts.

These Labels are gummed and perforated and ready to be placed on the bottle. The book is arranged so that the Labels can be removed without destroying the book. This is the most perfect Label Book ever published.

- \* 6684. Labels, of glass, any description, black letters, in white, with gold rim, etc., for bottles up to 1 pint, 15 cents each, larger bottles, 20 and 25 cents, including the fastening.

6685. If engraved or etched directly in the glass, from 25 to 75 cts. per label.

- \*\* 6686. Labels, paper, gummed, of any description.

Shape,	a	b	c	d
Nos.	201, 209, 217.	229, 241.	263.	219, 259.
Price per box, 8 cts., per dozen, 75 cts.				
Nos.	2001,	2002, 2003,	2004,	2005, 2006, 2007,
Price per box,	.25	.25	.40	.40 .35 .25

- \* 6687. **Lactobutyrometer**, Soxhlet's, See figure 5191. complete, with wash bottles and support.....\$30 00
- \* 6688. **Lactoscope**, according to Professor Feser, See figure 5313. complete.....\$3 40  
See also apparatus for the analysis of milk and Milk Tester.
6689. **Lactometers**, Board of Health, each.....50 cts.
6689. With thermometer.....\$2 00
- \* 6690. **Ladles**, of iron, with pouring lip, for fusing metals, etc.
- | Diameter, | 2   | 2½  | 3   | 4   | 5   | 6 inches. |
|-----------|-----|-----|-----|-----|-----|-----------|
|           | .20 | .25 | .30 | .35 | .45 | .60 cts.  |

## LAMPS,

FOR HEATING, ILLUMINATING, ETC.

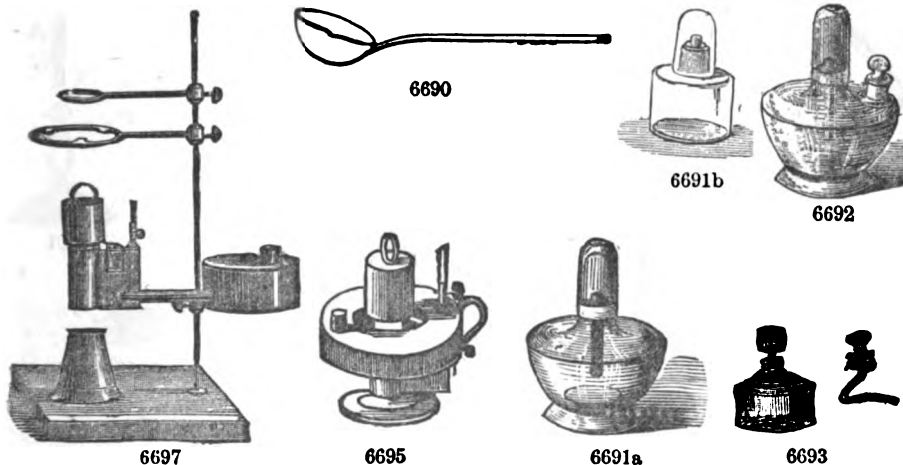
- \* 6691. **Lamps**, alcohol, with ground cap, best German make, with wick and wick holder included, styles a and b.

Contents,	1	2	4	6	8 oz.
	.30	.35	.40	.45	.50 cts.

- \* 6692. **Lamps**, alcohol, with ground cap, best German make, with side tubulation, wick and wick holder included, shape a and b.....10 cts. higher:

*like 6691b.*

Capacity,	2 oz.	4 oz.	6 oz.	8 oz.
	.45	.50	.60	.80 cts.



- \* 6693. **Ditto**, for alcohol and oil, brass, of new and improved construction, with screw top.

Capacity,	2 oz.	4 oz.	8 oz.
	.30	.40	.50 cts.

6694. **Ditto**, ditto, porcelain, 4 oz. each .....75 cts.
- \* 6695. **Ditto**, Berzelius', of improved construction, for alcohol and kerosene, giving more heat than any other alcohol lamp for general laboratory work, complete \$4 00
6696. **Ditto**, Rose's, for heating crucibles with alcohol or kerosene, on brass stand, with 2 rings, chimney and polished wooden base, improved construction..\$6 00
- \* 6697. **Ditto**, ditto, Mueller's modification.....6 50
6698. **Ditto**, alcohol Mitscherlich's, the alcohol reservoir is of glass, and is placed distant from the burner, with one arm of brass, with iron ring and triangle to support a crucible over the flame.....\$7 50

\* 6699. Lamp of brass, Luhmes, for decoctions and general laboratory work..\$7 00

\* 6700. Lamp, incandescent.

20	16	10	6	3	1 candle power.
\$1 50	1 25	1 00	.90	.60	.60

6700a. Stand for lamps.....50 cts.

6700b. Lamps, electric, arc, plain..... 4 00

6700c. Ditto, ditto, with reflector..... 5 00

—\* 6701. Lamps, illuminating, for gas, heavy brass base and rod, with iron bound clay cylinder and chimney, to be used with the polariscope \$7 50  
Nickel plated..... 8 00

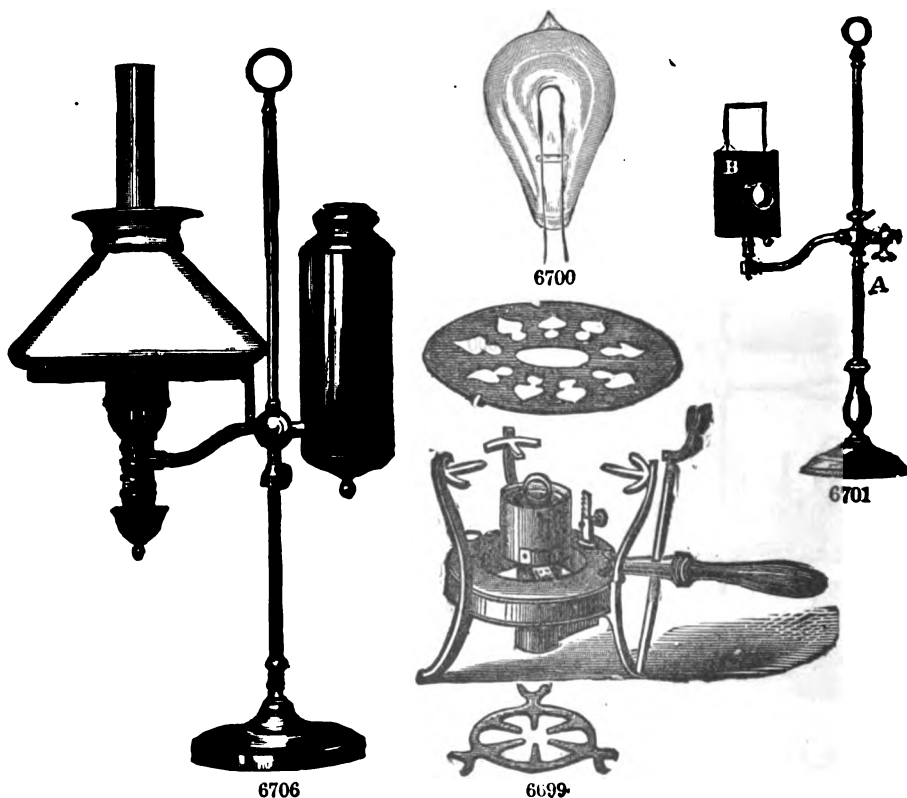
— 6702. Ditto, ditto, for kerosene..... 8 00

— 6703. Ditto, ditto, to burn gas, arranged with green shade and blue chimney for the microscope, complete.....\$10 00. Plated.....\$11 00

— 6704. Ditto, ditto, double arm..... 13 50. Plated..... 15 00

6705. Ditto, Hinks, new form, with triple gas burner, the best Polariscope Lamp known.....15 00

6705a. Ditto, for kerosene.....\$12 00



**The Perfection Study Lamp.**—These lamps are claimed to be the perfection of mineral oil lamps for illumination. The burner is the invention of the Chief Mechanic of the United States Light-house Service.

—\* 6706. Nickel plated, with chimney and shade, 7 in. shade, 20 candle power.....\$5 00

— 6707. Polished brass, ditto, ditto..... " " " "..... 4 00

— 6708. Extra large size, polished brass, ditto.... 10 in. shade, 25 candle power..... 6 75

— 6709. " " nickel plated, ditto..... " " " " "..... 7 50

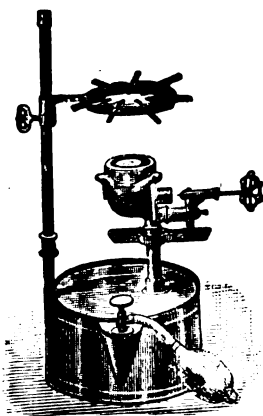
— 6710. Double Lamp, polished brass, shades, etc. 7 " 40 " "..... 8 00

— 6711. Double Lamp, nickel plated, shades, etc.. 7 " 40 " "..... 9 00

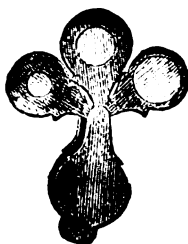
**Lamps for gas, (see Burners).**

- 6712. Lamp, double, brass, 10 in. shade, 50 candle power.....\$9 00  
 — 6713. Ditto, ditto, nickel plated, 10 in. shade, 50 candle power.....10 00  
 — 6714. Lamps, Dobereiner's Hydrogen (see Dobereiner's Lamps), producing instantaneously a hydrogen flame, plain.....\$3 50. Fancy.....\$5 00  
     Extra zincs.....25 cts.  
 6715. Lamp to burn Mag., with clockwork and reflector, (hand lamp, \$3 00) 10 00 and 25 00  
 ○ 6715a. Ditto, Magnesium ribbon for same, per oz.....50  
 — 6716. Ditto, for dividing perfumes, formaldehyde, etc.....1 50  
 — \* 6716a. Dangler Lamp, for gasolene, giving as perfect a flame as a gas-burner... 5 00  
 6717. Lamp plates, of porcelain.....60  
 6718. Lamp Wicks, for Berzelius' and Rose's lamps, dozen.....25 cts.  
 6719. Ditto, ditto, for alcohol lamps, bundle.....5 cts.  
 6720. Ditto, ditto, for blow-pipe lamp, dozen.....20 cts.  
 6721. The College Lantern, as used by Prof. Henry Morton, combines the ordinary magic lantern with the latter's vertical lantern, complete.....\$250 00

### Lead Basket and Tripods, (see there.)



6716a



6730



6731



6732

### 6722. Lead Tray, for etching on glass.

Diameter,	2	2½	3	3½	4	5	6 in.
	.12	.15	.20	.22	.25	.30	.35 cts.

6723. Ditto, ditto, with iron jacket and Bunsen's Burner.....\$1 75 extra.

6724. Leaf, Dutch gold, per book.....15 cts.

○ 6725. Ditto, genuine gold, per book.....40 cts.

○ 6726. Ditto, genuine silver, per book.....20 cts.

○ 6727. Ditto, ditto, aluminium, per book.....20 cts.

6727a. Ditto, platinum, per sheet.....10 cts.

6728. Lenses, magnifying, in fine rubber cases, single.....40 cts.

6729. Ditto, ditto, double.....50 cts.

\* 6730. Ditto, ditto, 3 glasses.....60 cts.

\* 6731. Ditto, in brass casing.....75 cts.

\* 6732. Ditto, Coddington's, very powerful, in brass case, with handle, small.... 1 00

Large.....1 80

For other Lenses, (see Supplement List, "Optics.")

### 6733. Letters, of steel, for marking bullion, etc.

1-16	½	3-16	¼	5-16	⅜	7-16	⅓ inch.
\$2 00	2 25	3 00	3 60	4 00	6 00	8 40	10 75

- |   |        |
|---|--------|
| ○ 6734. Lightning Rods, (end parts of,) a heavy copper rod with solid platinum point<br>screwed on..... | \$5 00 |
| (Separate tips, 60 cts. per gramme.)  |        |

* 6735. Levels, brass.	3	4	5 inch.
	.50	.60	.70 cts.

* 6736. Level, Iron Pocket,	3	5	6 inch
	.25	.30	.40 cts.

- |  |    |
|--|----|
| * 6737. Levels, Brass, round, for bacterioscopical investigations..... | 25 |
|--|----|

**6738. Leveling Screws, for Prescription Balances, Bacterioscopic tables, etc.**

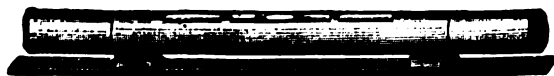
For	50	100	250	500	1,000 grm. balance.
	\$1 20	1 40	1 60	2 00	2 30 each set.

**Lights to illuminate table, (see Burners.)**

- |                      |                   |       |        |        |        |
|----------------------|-------------------|-------|--------|--------|--------|
| * 6739. Leyden Jars. | $\frac{1}{2}$ pt. | pint. | quart. | 2 qts. | 1 gal. |
| Price.               | \$1 00            | 1 25  | 1 50   | 2 00   | 2 50   |

6739a. The Jars only, uncovered, of Bohemian glass.

	$\frac{1}{2}$ pint.	pint.	quart.	2 qts.	1 gal.
Each,	.15	.20	.25	.35	.50



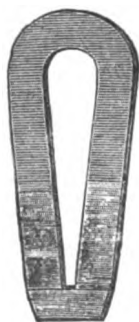
6735



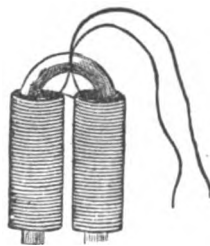
6749



6744



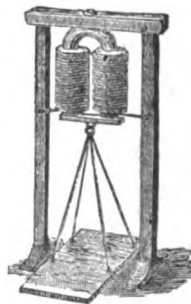
6745



6747



6736



6748



**. 6739**

- 6740. **Litmus**, in cubes (Pencils red and blue combined, 25 cts. each).....lb. 25 cts.

- 6741. Litmus Paper, blue and red, quire.....75 cts.**

**Litre Flasks,** (see Flasks, volumetric.)

- 6742. **Magnesium**, ribbon.....50 cts ..... Wire, ounce, 50

6743. Ditto, powder..... ounce, 50

* 6744. Magnets, of steel, straight,	4	5	6	8	10 in.
	.25	.30	.35	.40	50

- \* 6745. Ditto, horse shoe, best English, very powerful.

2	3	4	5	6	8	10	12 inches.
.10	.12	.16	.25	.35	.90	\$1 75	2 25

- |                                    |   |   |          |
|------------------------------------|---|---|----------|
| 6746. Ditto, compound, horse shoe, | 4 | 4 | 4 bars.  |
|                                    | 6 | 8 | 10 inch. |

\$4 00	6 00	10 00
--------	------	-------

40 50 01

- \* 6747. Ditto, electro.

5	20	40	50 Ohms.
\$2 00	2 25	2 25	2 75

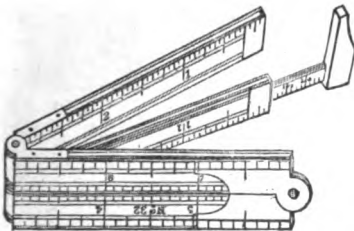
- \* 6748. Ditto, electro, for school use, in wooden frame, size of magnet :

6	8	10	12 inches long.
\$8 00	12 00	15 00	25 00

- |   |        |
|---|--------|
| * 6749. Magnetic Needles, on stand..... | \$1 00 |
|---|--------|



- \* 6749a. **Magnifiers or Reading glasses**, rubber frame and wood handle.  
 No. 200 201 202 203 204 205 206 207 208 209 210  
 Size of glass, 1½ 1¾ 2 2¼ 2½ 2¾ 3 3¼ 3½ 3¾ 4 in. diam.  
 .50 .60 .70 .80 .90 \$1.00 1.25 1.50 1.75 2.00 2.25
- 6749b. **Marine glue**, hard, lb. .... \$3 00. Ounce ..... 25 cts.  
**Magnetism**, (see Physical Apparatus, Supplement List.)  
**Magneto-Electricity**, (see Physical Apparatus, Supplement List.)
- **Magnet**, natural, Lode Stone, per lb. .... 50 cts.  
**Mädgeburg Hemispheres**, of brass, (see Appendix, Physical Apparatus )
- \* 6750. **Manometer**, or Pressure Syphon, concentric, according to Schiele, used in gas works.  
 Length, 10 12 16 inches.  
 Plain, \$1 00 1 25 1 50 each.  
 Graduated into inches or cubic centim, 1 60 2 00 2 40 each.
- \* 6751. **Manometer or Mercury Gauge**, with movable scale on support, with stop-cock. .... \$6 00  
 With scale on mirror glass. .... 7 00
- 6751a. **Small Manometer**, with or without gauge, to order from. .... \$1 00 to 4 00
- See also Gauges for pressure, vacuum, etc.
6752. **Marsh's Apparatus**, for detection of arsenic, on polished wooden stand, (see also Apparatus for arsenic determination.) .... \$2 20
- \* 6753. **Matrasses**, of hard Bohemian glass.  
 Dozen ..... 5 cts. Each ..... 10 cts.
6754. **Ditto, ditto**, for blow-piping, German glass.  
 Dozen ..... 30 cts.



6755



6753



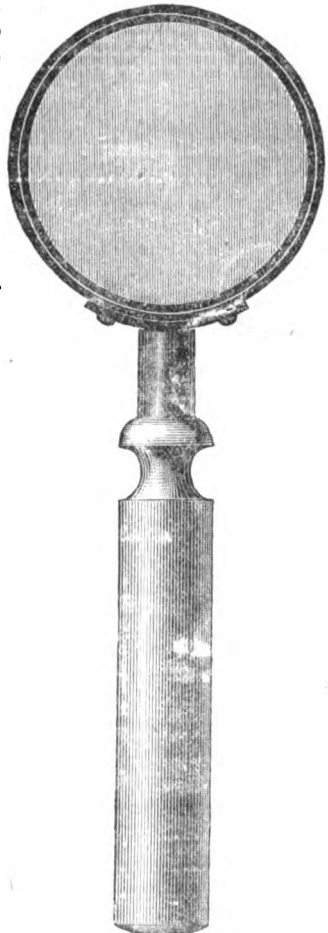
6750



6756



6757



6749a

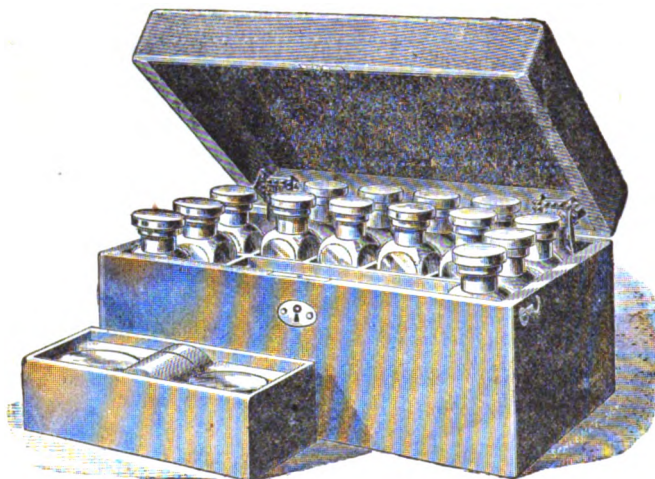
- \* 6755. **Measures, folding, divided accurately in inches, centimeters and fractions.** a, of hard wood, with caliber extension of brass ..... 50 cts.  
 — b, of ivory, in German silver frame, inches and centimeters. .... \$2 50

- \* 6756. **Measuring Tape**, steel, inches, and centimeters, German silver case.  
 3 feet, 6 feet, 12 feet  
 \$1 50 2 25 3 50

- \* 6757. **Measuring Tape**, steel, inches only.  
 25 50 100 feet.  
 \$4 50 7 20 12 80

○ 6758. Measuring Tape, metallic,	25	50	100 feet.						
	.90	1 50	2 90						
— 6759. Measures of tin. Contents,	$\frac{1}{16}$	$\frac{1}{8}$	1 pt.	1 qt.	$\frac{1}{4}$	$\frac{1}{2}$	2	3	5 gals.
	.15	.20	.25	.30	.40	.55			
— 6759a. Ditto, ditto, extra heavy,	.30	.35	.40	.50	.65	.80	\$2.00	3.00	4.00
* 6760. Measures, seamless of agate ware.									
	$\frac{1}{4}$ pint	$\frac{1}{2}$ pint	pint	quart	$\frac{1}{2}$ gal.	1 gal.			
	.30	.40	.50	.70	.90	\$1.20			
— 6761. Measures of copper.									
	$\frac{1}{4}$ pt.	$\frac{1}{2}$ pt.	1 pt.	2 pt.	$\frac{1}{2}$ gal.	1 gal.	2 gal. (with bail)		
	.40	.55	.70	.85	\$1 25	1 85	4 25		

Measures and Jugs, of lead, for sulphuric, hydrofluoric acid, etc., to order.  
Other Measures, (see Graduates.)



6770



6762



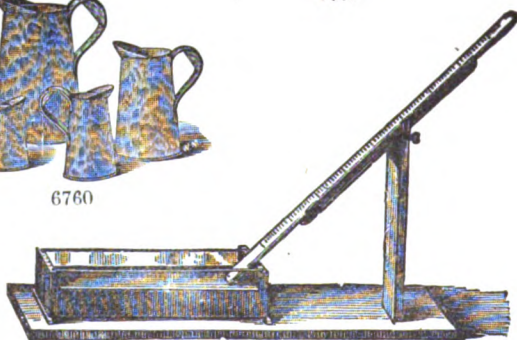
6763



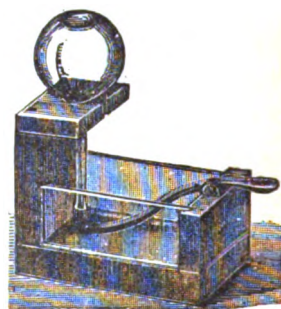
6759



6760



6765



6768

- \* 6762. Mercury Troughs, porcelain, form like a cross, capacity 6 lbs. mercury . . . 90 cts.
- \* 6763. Ditto, ditto, usual form, capacity about 8 lbs. mercury . . . \$1 00
- 6764. Ditto, ditto, usual form, capacity about 16 lbs. mercury . . . 1 50
- \* 6765. Ditto, ditto, Bunsen's, of wood, with two glass sides, the whole wooden base, with movable support for the eudiometer, complete . . . \$7 75
- 6766. Ditto, ditto, all wood . . . 1 50
- 6767. Ditto, ditto, of cast iron, set in mahogany case, large size, according to Griffin. Price . . . 9 00
- \* 6768. Ditto, ditto, with flasks to measure the volume of gases . . . 7 50
- 6769. Medicine Chest, with ten 2 oz. square stoppered bottles, 2-1 oz. patent poison bottles, tray containing boxes, etc., outside dimensions,  $4\frac{3}{4} \times 5\frac{1}{2} \times 6\frac{3}{4}$ . A very useful traveling re-agent, price . . . \$2 50
- \* 6770. Ditto, Ditto, large size, containing 16-2 oz. bottles, etc., price . . . 4 00

## MICROSCOPES AND OBJECTIVES.

Manufactured by **THE SPENCER LENS CO., of Buffalo, N. Y.**

As Sole Agents for the above named Company, we now handle the best American Microscopes and Lenses, besides the best European, which we import for Universities and Colleges, duty free at Manufacturers' original Prices.

See Zeiss' Microscopes, pages 297-303b.

### SPENCER MICROSCOPE.

—\* 6781.

#### DESCRIPTION OF STAND NO. 1.

Brass, polished and lacquered. Height, 12 inches. Weight, 8½ pounds. The base is filled with lead for extra weight, is in horse-shoe or Y form as preferred. Stout pillar with hinged joint for inclination. Stage, 4x3½ inches, faced with hard rubber, furnished with spring clips. The sub-stage is movable by quick sextuple screw, in protecting sleeve, at lower point of movement swinging outward to allow ready change of accessories. Diaphragm has three different sizes of aperture. The mirrors plane and concave with unusual range of motion, sliding and swinging upon arm. The focal length of the concave mirror accurately adapted. Fine adjustment by micrometer screw with graduated head. Coarse adjustment by diagonal rack and pinion. Body and draw tube of ample size, permitting the use of low power oculars of the largest field, advantageous in both visual and photographic work. Draw tube nickel plated and graduated in mm. Draw tube fitted with society screw. Oculars of any preferred power.

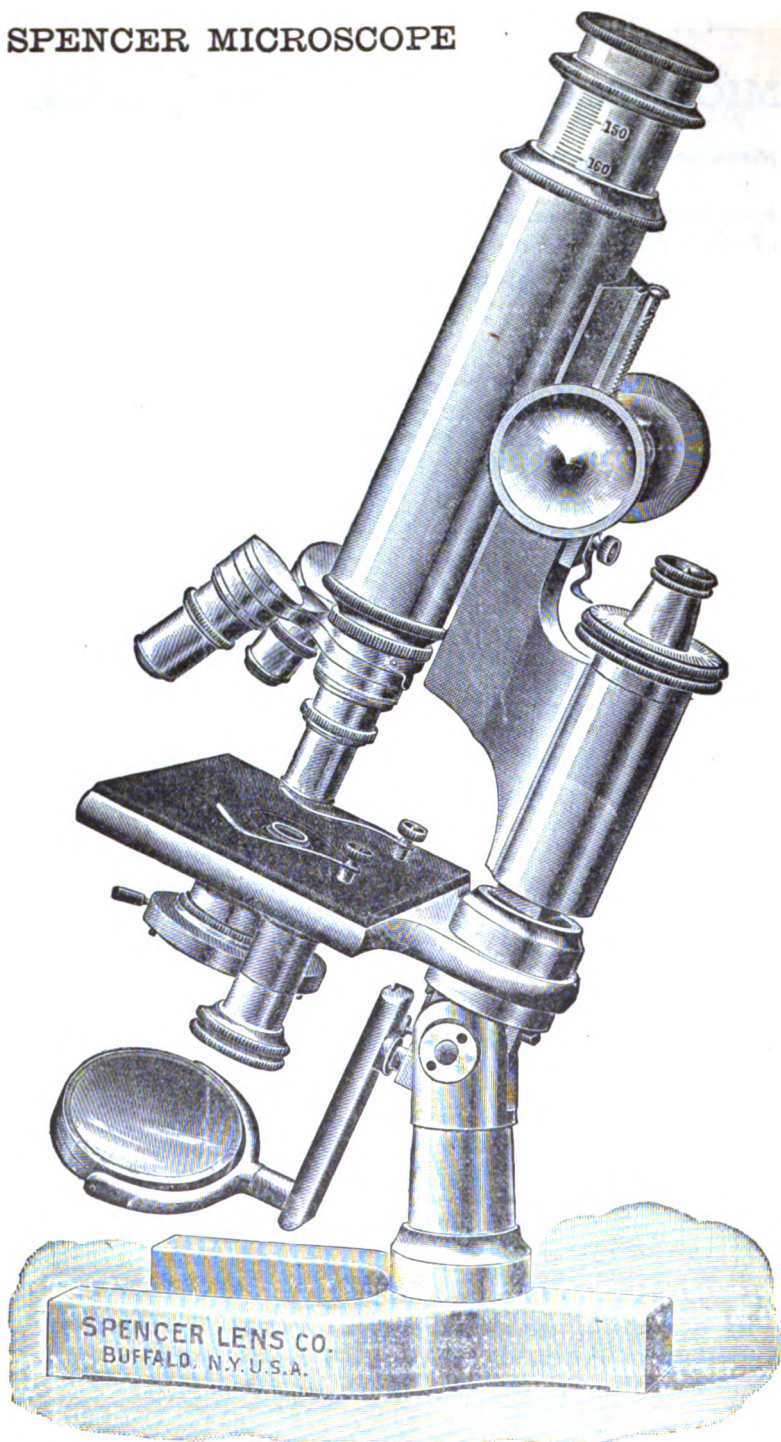
Also furnished with round, revolving centering stage, with plain metal or faced with hard rubber, at an additional cost of \$18.00 for the plain metal face, and \$20.00 for the hard rubber face.

Stand No. 1A, with 1 eyepiece, ¾-inch and ⅙-inch objectives.....	\$ 52.80
“ 1B, Same as above, with double nosepiece .....	57.80
No. 1C, with 2 eyepieces, ¾-inch and ⅙-inch objectives. ....	55.00
“ 1D, Same as above, with double nosepiece.....	60.00
No. 1E, with 2 eyepieces, 2-inch, ¾-inch and ⅙-inch objectives.....	61.60
“ 1F, Same as above, with triple nosepiece.....	69.10
No. 1G with 2 eyepieces, ¾-inch and ⅙-inch dry, and ⅙-inch oil immersion objectives, Abbe condenser and iris diaphragm.....	96.25
“ 1H, Same as above, with triple nosepiece. ....	103.75

These instruments are furnished, when desired, with Iris diaphragm fixed in the plane of the stage, as shown by cut, for convenience in using the dry objectives.

The above prices include Polished Hard Wood Cabinet, with lock and key.

## SPENCER MICROSCOPE



( CUT ONE-HALF ACTUAL SIZE. )

CONTINENTAL FORM NO. 1. No. 6781

## SPENCER MICROSCOPE.

—\* 6782.

### DESCRIPTION OF STAND NO. 2.

Brass, polished and lacquered, except base, which is of japanned iron, and stage, which is brass with dull black finish. Height, 12 inches. Stout brass pillar, lacquered, with hinged joint for inclination. Stage,  $4 \times 3\frac{1}{2}$  inches, furnished with spring clips and with revolving diaphragm, with four apertures of different sizes, fitted to its under surface. It is provided with plane and concave swinging mirrors, sliding upon arm with a range of motion which permits of use for top illumination. Tubes and adjustments are the same as in our No. 1 Stand. Fine adjustment by micrometer screw. Coarse adjustment by diagonal rack and pinion. Draw tube nickel-plated and fitted with society screw.

Oculars of any desired power.

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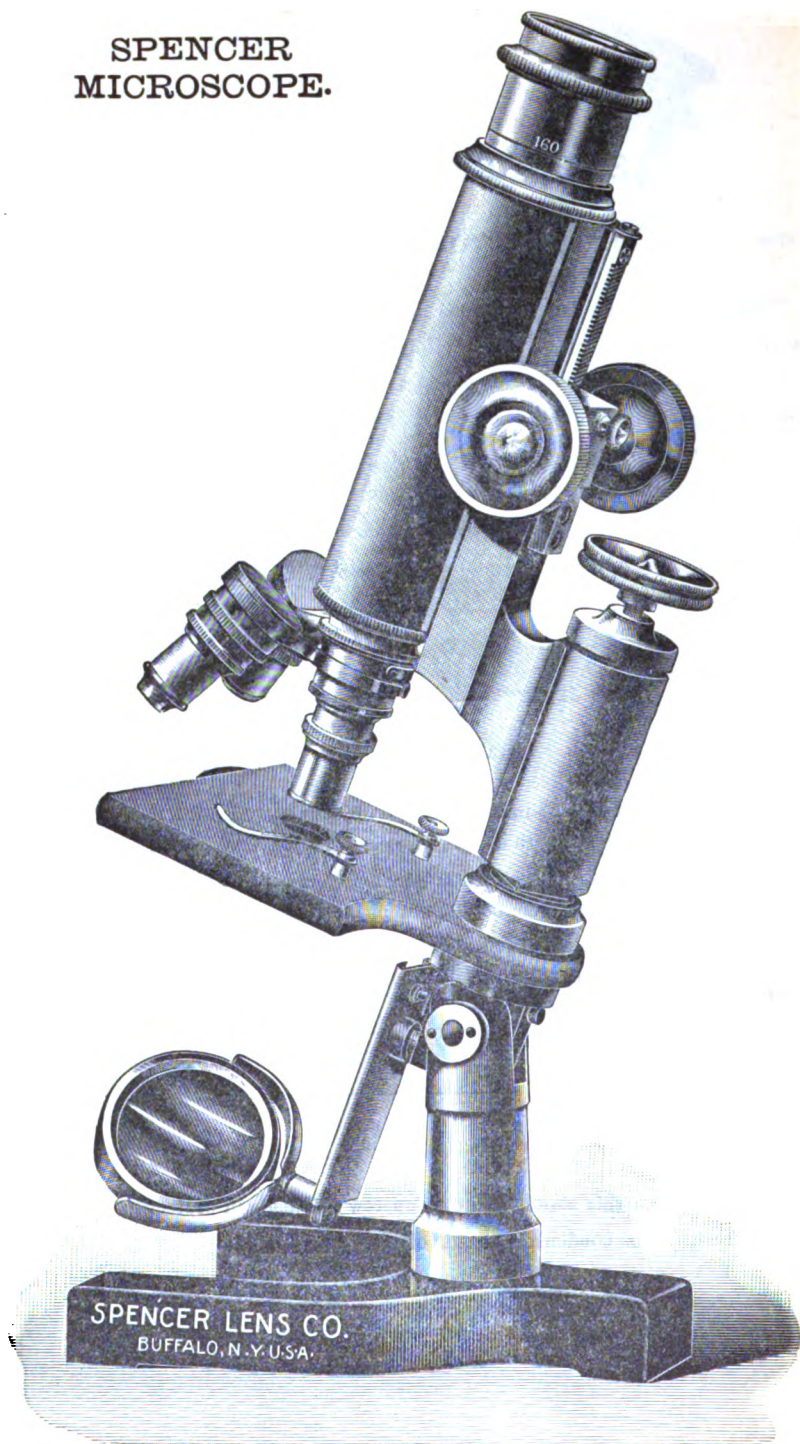
Stand No. 2A, with 1 eyepiece, $\frac{3}{8}$ -inch and $\frac{1}{4}$ -inch objectives.....	\$42.50
“ 2B, Same as above, with double nosepiece.....	47.50
No. 2C, with 2 eyepieces, $\frac{3}{8}$ -inch and $\frac{1}{4}$ -inch objectives.....	44.50
“ 2D, Same as above, with double nosepiece.....	49.50
No. 2E, with 2 eyepieces, 2-inch, $\frac{3}{8}$ -inch and $\frac{1}{4}$ -inch objectives.....	49.50
“ 2F, Same as above, with triple nosepiece.....	57.00

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We also furnish this stand with quick screw sub-stage in protecting sleeve equipped when desired with Abbe condenser and Iris diaphragm.

The above prices include Polished Hard Wood Cabinet, with lock and key.



**SPENCER  
MICROSCOPE.**

( CUT ONE-HALF ACTUAL SIZE. )

**CONTINENTAL FORM NO. 2. No. 6782.**

## SPENCER MICROSCOPE.

—\* 6783.

### DESCRIPTION OF STAND No. 3.

This very neat and tasteful instrument is especially commended to those who desire a superior microscope adapted for the best work, but at a very moderate cost. It is peculiarly suited for botanical and biological work, and for the general requirements of schools and academies. The same care is bestowed upon the construction and finish, as in the case of the more expensive stands.

The horseshoe base and pillar are japanned and very smoothly finished. The stout pillar and hinged joint for inclination, are the same as in the higher priced stands. Brass stage, dead black finish, fitted with revolving diaphragm, having four apertures of different sizes. Plane and concave mirrors with double motions, and sliding in a swinging arm of length to permit use for top illumination when desired. Fine adjustment by micrometer screw. Coarse adjustment by nickel plated sliding tube, carefully fitted in a cloth lined tube provided with clamp ring and set screw. Nickel plated draw tube. Other parts finely polished and lacquered.

---

Stand No. 3A, with 1 eyepiece, $\frac{3}{8}$ -inch and $\frac{1}{4}$ -inch objectives.....	\$37.50
“ 3B, Same as above with double nosepiece.....	42.50
No. 3C, with 2 eyepieces, $\frac{3}{8}$ -inch and $\frac{1}{4}$ -inch objectives.....	39.50
“ D Same as above, with double nosepiece.....	44.50

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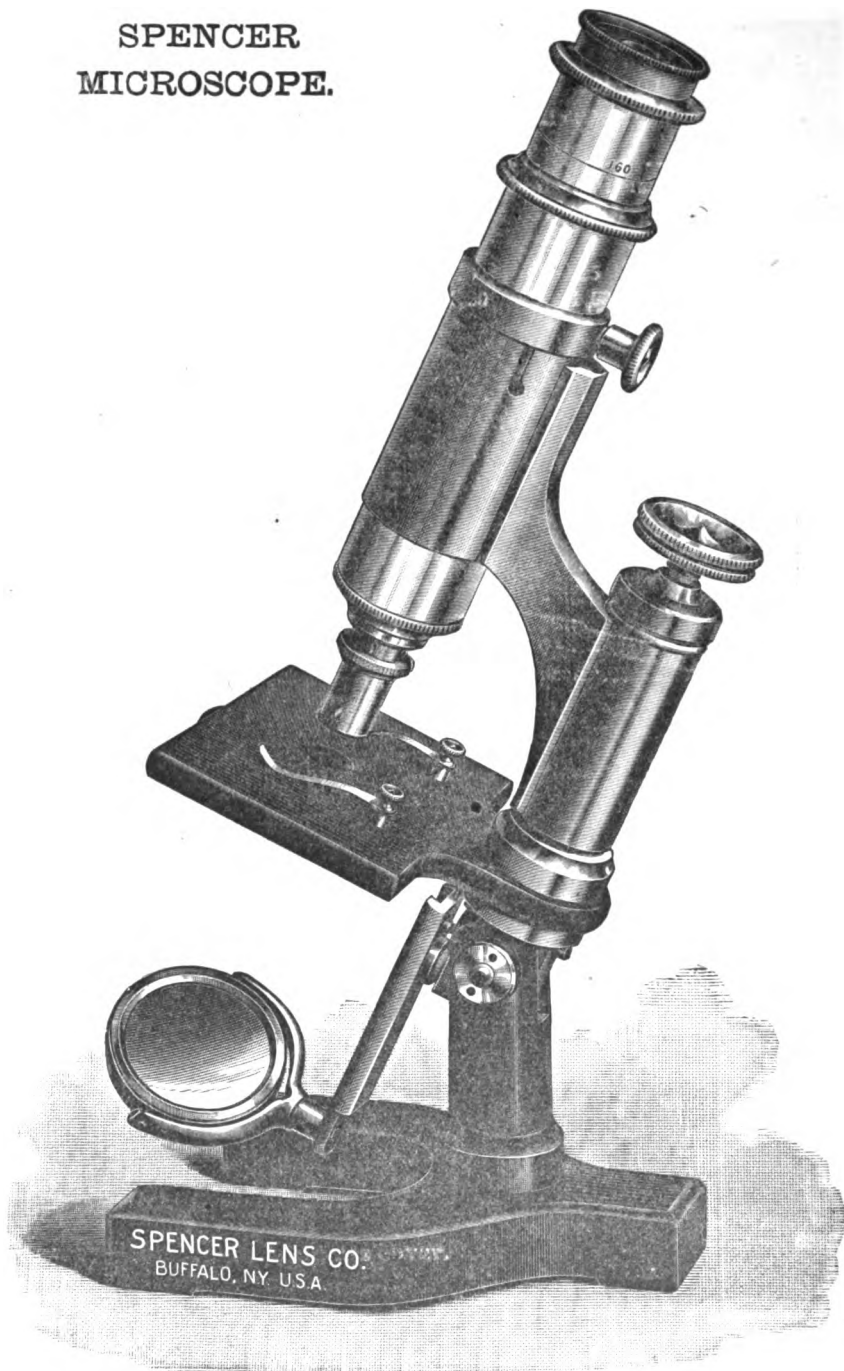
We shall be glad to quote upon any other combination of objectives and oculars.

If required, our quick screw substage can be attached, thus providing for the use of condenser and iris diaphragm.

---

The above prices include Polished Hard Wood Cabinet, with lock and key.

SPENCER  
MICROSCOPE.



(CUT ONE-HALF ACTUAL SIZE.)

CONTINENTAL FORM NO. 3. No. 6783.



## SPENCER LENS CO.'S OBJECTIVES.

Bacteriological Series, non-adjusting.				
— 6784.	Focal length.	Num. ap.	Balsam angle.	Price.
	$\frac{1}{4}$ inch	1.22	106°	\$35.00
	$\frac{1}{2}$ inch	1.35	125°	45.00
First-class dry series, adjustable.				
— 6785.	Focal length.	Num. ap.	Air angle.	Price.
	1 inch	0.35	40°	35.00
Professional series.				
— 6786.				
	$\frac{3}{4}$ inch	0.31	aa 36°	dry, non adj. 18.00
	$\frac{1}{2}$ inch	0.58	" 70°	" " 25.00
	$\frac{1}{4}$ inch	0.85	" 116°	" adjustable 24.00
Student series, non-adjusting.				
— 6787.				
	3 inch	0.10	aa 11°	doz. 6.00
	2 inch	0.12	" 13°	" 6.00
	1 inch	0.26	" 30°	" 15.00
	$\frac{3}{4}$ inch	0.26	" 30°	" 10.00
	$\frac{1}{2}$ inch	0.77	" 100°	" 10.00
	$\frac{1}{4}$ inch	0.86	" 118°	" 14.00
Educational series, non-adjusting.				
— 6788.				
	3 inch	0.07	aa 8°	doz. 5.00
	2 inch	0.08	" 10°	" 5.00
	1 inch	0.12	" 13°	" 5.00
	$\frac{3}{4}$ inch	0.35	" 45°	" 10.00
	$\frac{1}{2}$ inch	0.61	" 75°	" 12.00
	$\frac{1}{4}$ inch	0.71	" 90°	" 12.50
	$\frac{1}{8}$ inch	0.68	" 85°	" 12.00
	$\frac{1}{10}$ inch	0.78	" 102°	water im. 18.00

In ordering objectives state whether for 160 or 220 mm. tube length.

## EYE-PIECES.

New Aplanatic Positive.				
— 6789.	Focal length,	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	$\frac{1}{2}$ inch.
	Price,	\$12.00	10.00	10.00 12.00
Solid Eyepieces.				
— 6790.	Focal, length,	$\frac{1}{2}$ inch		
	Price,	\$8.00	8.00	
Huyghenian Eyepieces.				
— 6701.	Focal, length,	2	$\frac{1}{2}$ inch	
	Price,	\$6.00	6.00 6.00	8.00



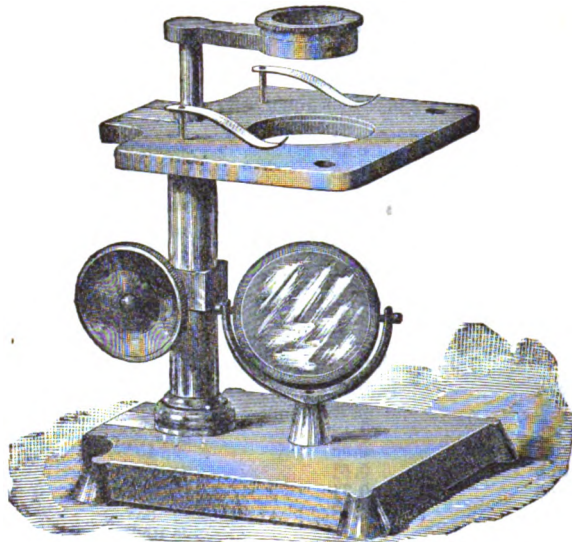
(Cut one-half actual size.)

## DEMONSTRATION MICROSCOPE.

○ 6792.	O, with 1 continental eyepiece, no objective	\$ 6.00
	O1, with 1 continental eyepiece and $\frac{1}{2}$ -inch objective	12.00

**FOLDING DISECTING MICROSCOPE.**

- \*○ 6793. Stand, as per cut.....\$10.00  
 Arm for Lenses, with joint in place of single arm, extra.....1.00  
 Triple Arm for carrying 3 lenses, arranged so that all lenses focus in same plane.....1.50  
 Metal Hand Rests, per pair.....1.25



6693

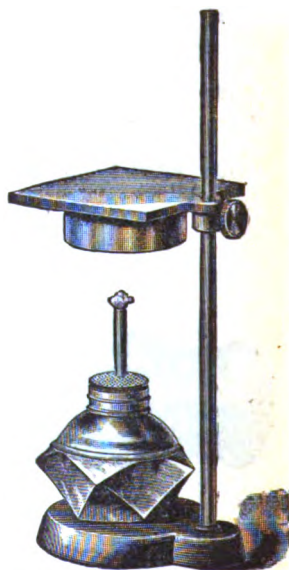
- \* 6795. Capped Bottle for holding mounting fluids, with glass rod or pipette.....40 cts.  
 \* 6797. Watch Glasses, improved, Syracuse, solid.  
 ○ a. Beveled surface, plain, not ground, per dozen.....\$ 75  
 ○ b. Beveled surface, smoothly ground, per dozen.....1 25  
 ○ Standard, for Syracuse Watch glasses, adapted for a nest of 6 or less, each...50 cts.



6795



6797



6798-99

- \* 6798. Mounting Stand, with lamp and sand bath....(for gas, \$3 50).....\$2 00  
 ○ \* 6799. Glass Spirit Lamp, with cover, 3-16 inch burner, 70 cts. ¼ inch burner.....80 cts.  
 ○ 6800. Dissecting Knives, 14 different styles, each.....50 cts.  
 ○ 6802. " Needle Holder with clamp and 4 needles.....15 cts.  
 ○ 6803. " Scissors, straight.....50 cts. Bent.....75 cts.

## MICROSCOPIC SLIDES.

## Imported English, best quality.

- 6804. No. 3800, Glass Slips, 3x1 inch, cut edges,  $\frac{1}{2}$  gross packages, per dozen, 10 cents, per gross..... 60 cents.
- 6804a. **No. 3810, Glass Slips, 3x1 in. ground, per doz. 10 cts. per gross, 85 cts.**
- No. 3830, " " 3x1 " " extra thin, per dozen 14 cents, per gross..... \$1 00
- 3880. Glass Slips, 3x1 inch, with concave centers, ground edges, per doz, 60 cents.

## MICROSCOPIC COVERS.

○ 6805. In squares, put up,  $\frac{1}{2}$  oz. in box.

Diameters,	$\frac{1}{2}$	9-16	$\frac{3}{8}$	11-16	$\frac{1}{2}$	$\frac{3}{4}$ inch.
No. 1, quality, any size, per doz. 16 cts. per oz.....						\$1 05
No. 2, " " " 14 " " .....						80
No. 3, " " " 12 " " .....						60

○ 6806. In circles, put up,  $\frac{1}{2}$  oz. in box.

Diameters,	$\frac{1}{2}$	9-16	$\frac{3}{8}$	11-16	$\frac{1}{2}$	$\frac{3}{4}$ inch.
No. 1, quality, any size, per doz. 18 cts. per oz.....						\$1 25
No. 2, " " " 16 " " .....						1 00
No. 3, " " " 14 " " .....						80

## ○ 6807. Mounting Materials, of best quality. (See also our special Grübler's list).

No. 4100, Absolute Alcohol Dr. Squibbs', per bottle.....	\$0.20	No. 4045, King's Lacquer Cell and Finish, Blue, with directions.....	.50
No. 4110, Benzole, pure, per bottle.....	.20	No. 4050, Marine Glue, hard, per box....	.25
No. 4200, Canada Balsam, paper filtered, in flexible tubes, each.....	.20	No. 4055, " " fluid, per bottle..	.30
No. 4210, Canada Balsam, with benzole, requires no heat, per bottle.....	.40	No. 4060, " " colorless, " .....	.40
No. 4215, Canada Balsam, with chloroform, per bottle.....	.40	No. 4065, White Zinc Cement, " .....	.40
No. 4220, Canada Balsam, with xylol, requires no heat, per bottle.....	.40	No. 4420, Ammonia Carmine, Beale's" .....	.25
No. 4230, Damar Balsam, per bottle.....	.40	No. 4425, Borax Carmine.....	.25
No. 4235, Deane's Medium, per bottle....	.35	No. 1355, Picro.....	.25
No. 4240, Farrant's Medium, per bottle....	.50	No. 4355, Aniline, Blue.....	.20
No. 4245, Glycerine, pure, per bottle....	.20	No. 4360, " Green.....	.20
No. 4250, Glycerine, camphorated, for delicate vegetable tissues, per bottle.....	.25	No. 4365, " Red.....	.20
No. 4255, Glycerine, jelly.....	.50	No. 4370, " Violet.....	.20
No. 4140, Oil of Cloves, per bottle.....	.35	No. 4375, Methyl, Blue.....	.20
No. 4000, Asphalt, per bottle.....	.25	No. 4385, " Green.....	.20
No. 4005, Asphalt, quick drying, per bot.	.35	No. 4390, Eosin.....	.20
No. 4010, Brown's Transparent Rubber Cement, per bottle.....	.35	No. 4440, Haematoxylin.....	.20
No. 4015, Brunswick Black, per bottle....	.25	No. 4445, Sulphindigotate of Soda.....	.20
No. 4020, Gold Size, per bottle.....	.25	No. 4450, Burrill's Stain, for Bacillus Tuberculosis, with directions, per bottle..	.30
No. 4025, Hollis' Glue, per bottle.....	.30	No. 4395, Gentian Violet.....	.20
No. 4030, King's Amber Cement, transparent, with directions, per bottle.....	.25	No. 4400, Bismark Brown.....	.20
No. 4035, King's White Cement, transparent, with directions, per bottle.....	.25	No. 4145, Osmic Acid, 1-32 oz., glass capsule, per bottle.....	2 00
No. 4040, King's Lacquer Cell and Finish. Scarlet, with directions per bottle. .50		No. 4300, Carmine Injecting Gelatine. Dr. Seiler's, per oz.....	1 00
		No. 4105, Aniline Oil, pure, for use in preparation of Bacillus Tuberculosis... ..	.20
		No. 4310, Paraffine, pure, for imbedding, per pound.....	.40
		No. 4305, Celloidine, 1 oz. box.....	1 00

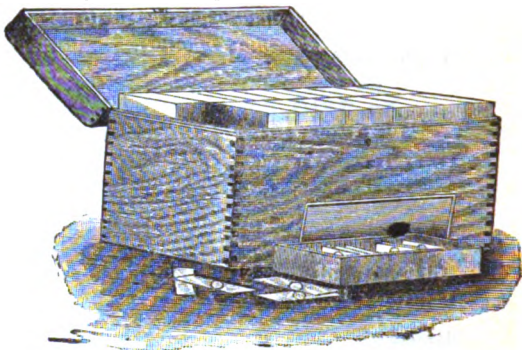
Labels for Slides, (See Labels.)

Gruebler's Preparations, see Special List.

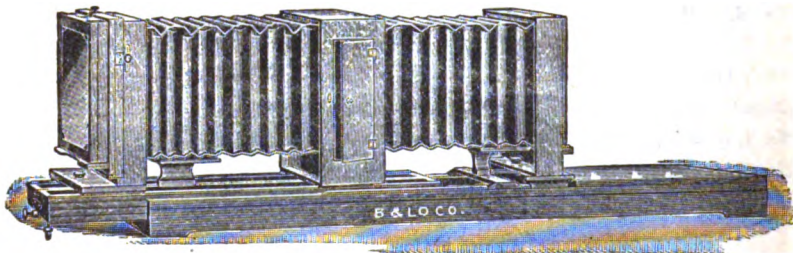
- 6808. No. 4680, **Portable Cabinet, Pillsbury's**, containing 10 boxes for 250 slides, Price .....\$3 00
- \* 6809. No. 4685, **Portable Cabinet, Pillsbury's**, containing 20 boxes for 500 slides ....4 00

The Pillsbury Cabinet consists of a finely polished cherry case, containing ten or twenty boxes, grooved on the inside, to receive twenty-five slides each, and provided with a lock. When the boxes are in place in the cabinet, the slides lie horizontally, thus avoiding all liability of damage to slides in top.

- Single boxes of plain white wood, neatly finished. (See No. 6808.) Each, 10cts.; doz. 75cts.

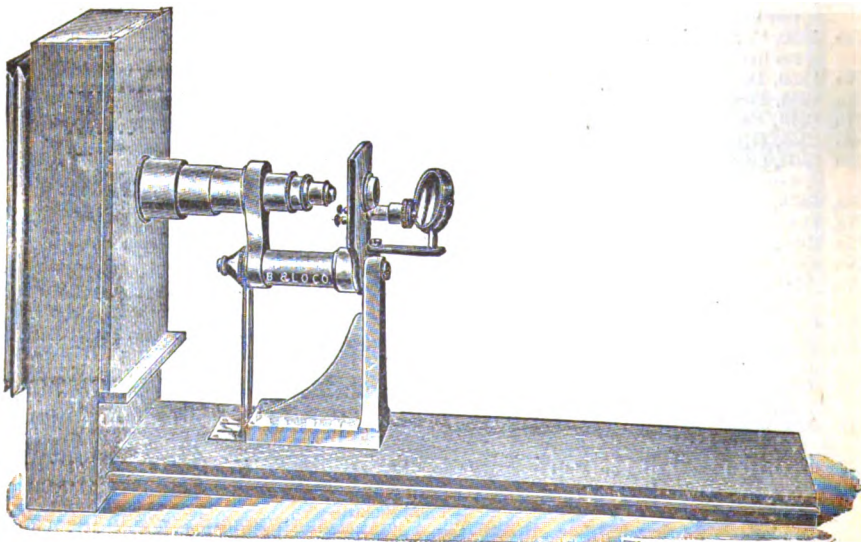


6809



6810.

- \* 6810. **"Complete" Photo-micrographic Camera** with one B. & L. Single Plate Holder,  $6\frac{1}{2} \times 8\frac{1}{2}$ , and sets of kits. Sliding Board for microscope and accessories Lens Board for holding a photographic lens in the central section and fraying Rods .....\$60 00
- B. & L. Single Plate Holder** for plates  $6\frac{1}{2} \times 8\frac{1}{2}$  with interchangeable kits down to  $3\frac{1}{2} \times 4\frac{1}{2}$ , each .....\$6 00
- Extra Lens Board**, each.....50 cts



6810a.

- \* 6810a. **Microscope attachment** for complete Photo-micrographic Camera. \$30 00

\* 6811. **Microscope**, for mineralogists and botanists. The lenses may be used either singly or together, are well made, and are provided with a proper diaphragm, which secures distinctness of definition. They give a range of power of from five to thirty diameters (twenty-five to nine hundred times the surface), the first being admirably adapted to the examination of minerals, textile fabrics, the larger parts of flowers, insects, etc., while the latter is sufficiently powerful to enable the student to dissect flowers, and examine their more minute structure with great efficiency. Under good management this microscope shows the individual corpuscles in the blood of the frog, and will exhibit very clearly and beautifully the circulation in the foot of this animal.

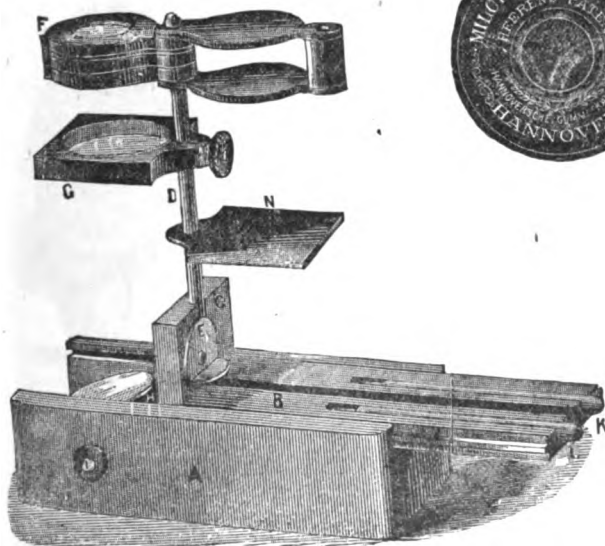
1. With two lenses,..... \$2 00
2. With three lenses,..... 2 25
3. Set of hard rubber slides, with openings of different kinds to serve as linen provers,..... 25 cts.

See also Lenses.

6812. **Microscopic Objects**, furnished to order at original prices, according to special list.

\* 6813. **Milk Tester**, Professor Heeren's color test, very practical..... 50 cts.

6814. Ditto, ditto, Professor Feser's lactoscope, complete in box, see fig. 5313..... \$3 40  
For other Milk Testing Instruments, see Apparatus for.



6811



6813



6815

—\* 6815. **Mills**, small, for grinding drugs, vegetables, etc., to be analyzed.

- Small, 10½ in. high.....\$3 50.      Medium, 15 in. high..... \$5 00  
Large, 20 in. high.....\$10 00

Minerals, Metallurgical and others, in collections or single specimens, furnished to any extent; also sets of specimens to illustrate the physical characters, as Hardness, Fusibility, Cleavage, Twin Crystallization, Structure, Pseudomorphism, Aggregation and Fracture, etc.

See also our special list of Chemicals and Minerals.

**Mineralogical Hammers**, (see Hammers.)

6816. **Millimeter Tubes**, absolute, correct for polarization apparatus, 100 milli. and 200 milli. dozen.....\$12 00

6817. Ditto, ditto, ditto, mounted, with caps, plates, washers, etc., each..... 3 50

**Minim Glasses**, (see Graduates.) **Minim Pipettes**, (see Pipettes.)

- \* 6818. **Mixing Capsules**, brass, Plattner's, nickel plated..... 20 cts.  
 6819. Ditto, ditto, gilded..... 45 cts.  
 6820. Ditto, ditto, horn..... 15 cts.  
 6821. Ditto, ditto, large, of Russian iron..... 40 cts.  
 \* 6822. Ditto, ditto, ditto, of copper. Small..... 75 cts. Large..... \$1 00  
**Mixing Jars**, (see Cylinders.)  
 — 6823. **Models**, of precious stones, 21 pieces in box, showing the crystallization, cutting and color of the respective gem ..... \$17 25  
**Models of Crystals**, (see Collections.)  
 6824. Models, technological, architectural, machinery, etc., etc., imported to order.  
 Mohr's Burettes, Balances, Clamps, Pinch-cocks, Pipettes, Potash Bulbs, Scales, (see there.)  
 6825. Mordanted Cloth, for dyeing experiments, 5 mordants, per yard ..... 40 cts.

## MORTARS.

- 6826. **Moeller, Robertson's**, of malleable iron. Diam., 6 inches 8 inches  
 small. \$6 00. Large. \$8 00  
 — \* 6827. **Mortars, agate, with pestles, of superior quality.** Outside dimensions.  

Diam.	1	1½	1½	1½	1½	1½	1½	1½ in.
	.75	\$1 00	1 20	1 25	1 30	1 35	1 50	1 75
Diam.	2	2½	2½	2½	3	3½	3½	3½ in.
	\$1 85	2 50	3 00	3 50	4 25	5 00	6 50	7 25
Diam.	4	4½	4½	4½	5	5½	5½	6 in.
	\$8 00	9 00	11 50	12 75	15 00	17 50	22 00	25 00 ,29 00

 6828. Ditto, ditto, mounted in polished wooden base, pestle with wooden handle.  
 Price..... \$1 00 to 1 50 extra.  
 Handle only..... 50 cts. to \$1 00



6822



6832



6834



6827



6833



6818



6829



6831

- \* 6829. Ditto, **diamond**, of hardest steel, Plattner's form, regular size, of superior make.  
 Price..... \$3 60  
 6830. Ditto, ditto, large size..... 5 50  
 \* 6831. Ditto, ditto, Leed's form..... 2 00  
 ○ \* 6832. Ditto, brass, with pestle.

Contents,	1 pint,	1 quart,	½ gal.
	\$4 00	5 50	7 00
* 6833. Ditto, of glass, with lip and pestle.			
Contents,	1	2	3
Diameter,	2	2½	3½
	.20	.25	.30
	.25	.30	.40
	.40	.60	.80
			\$1 20

- \* 6834. Ditto, of iron, for powdering ore; well made, urn shape.

Dimensions,	½	1	2 pints,	½	1	2 gals.
	4x4	5x5	6x6	7x6½	8x8½	11x10 in.
	.30	.40	.50	.75	\$1 40	2 00



## \* 6835. Mortars, Iron, heavier, bell shape.

	$\frac{1}{2}$	1	2 pts.	$\frac{1}{2}$	1	2	3	4 gals.
Dimensions,	4 $\frac{1}{2}$ x3	4 $\frac{1}{2}$ x4	5 $\frac{1}{2}$ x5	6 $\frac{1}{2}$ x6	8x7	10 $\frac{1}{2}$ x9	12 $\frac{1}{2}$ x11 $\frac{1}{2}$	13 $\frac{1}{2}$ x12 $\frac{1}{2}$ in.
	.. 0	.40	.60	\$1 00	1 50	2 75	4 50	5 50

6836. Ditto, chilled, equal to steel, specially made for powdering hard ores, Spiegel, etc., with extra large pestles.

Capacity,	3 gals.	2 gals.	1 gal.	$\frac{1}{2}$ gal.
Size,	12 $\frac{1}{2}$ x11 $\frac{1}{2}$	10 $\frac{1}{2}$ x9	8x7 in.	
Price,	\$6 50	4 50	3 00	2 00

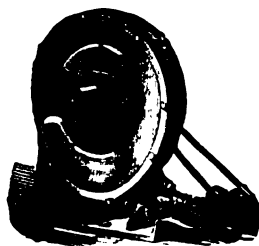
6837. Ditto, small size for the laboratory table, about 7 inches square, with 5 inch bowl, pestle included.....\$5 00

6838. Ditto, extra heavy shape, like Wedgewood Mortars, very excellent for grinding, heavy pestle, sold by the weight, 10 cents a pound.

Sizes	4 $\frac{1}{2}$ x3	6x3 $\frac{1}{2}$	7x4 $\frac{1}{2}$	9x5	11x6	13 $\frac{1}{2}$ x7 in.
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## \* 6839. Ditto, porcelain, best German make, with plain pestle, the larger sizes provided with wood handle, rough inside, glazed outside. Shallow form.

Shallow form.										
No.	8	7	6	5	4	3	2	1		
Diameter,	2½	2½	2¾	3½	4	4½	5½	6 in.		
Each,	.25	.30	.35	.40	.50	.60	.80	\$1 00		
No.	0	00	000	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Diameter,	6½	7½	8½	9½	10½	11½	12½	14	15	16 in.
Each,	\$1.20	1.40	1.50	2.00	2.40	3.20	4.00	5.50	7.80	11.00



6845-6846



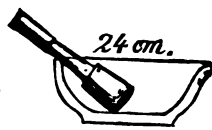
6835



6842



6844



6841



6840



6839

## \* 6840. Ditto, of German porcelain, for mixtures, glazed inside and outside, with lip and pestle. Deep form.

No.	4	3	2	1	0	00	000
Diameter,	3 $\frac{1}{2}$	4	5	5 $\frac{1}{2}$	6	7	8 in.
	.45	.60	.80	.90	\$1 10	1 40	1 60

## O\* 6841. Ditto, with pestle, of German acid proof stone ware.

16 inches diameter, \$3 50.

19 inches diameter, \$5 00.

## \* 6842. Ditto Wedgewood, pestle, with wooden handle.

No.	0000	000	00	0	1	2	3	4
Diameter,	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	6 $\frac{1}{2}$
Each,	.30	.35	.40	.45	.50	.60	.85	\$1 00
No.	5	6	7	8	9	10	11	12
Diameter,	7	8	8 $\frac{1}{2}$	9 $\frac{1}{2}$	10 $\frac{1}{2}$	12	13	14 in.
Each,	\$1 25	1 50	1 80	2 25	3 00	3 75	4 00	5 00

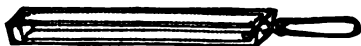
## \* 6844. Ditto, of German porcelain, labeled: Poison, Opium, Asafetida, Iodoform, Unguentum, etc.....\$1 25

## O\* 6845. Motor, hydraulic, the smallest motor known, very valuable for the laboratory where a good water pressure is available. No. 1, 7 inch diameter, will run a small stirrer for evaporations, etc., etc.....\$15 00

## O\* 6846. Ditto, 8 inch diameter, will run a large stirrer, a blower for the blast lamp, gig saws, mills, etc., etc.....35 00

6847. Larger sizes, for ore crushers, lathes, etc., etc., from.....\$100 00 to 200 00

- \* 6848. Moulds, for ingots, to take apart, plate,  $4\frac{1}{2}$  in. x 2 in. x  $\frac{1}{4}$  in. .... \$1 30  
 6849. Ditto, plate,  $6\frac{1}{2}$  in. x  $1\frac{1}{2}$  in. x  $\frac{1}{4}$  in. .... 1 50  
 \* 6850. Ditto, for ingots, new form, small,  $7\frac{1}{2}$  x  $1\frac{1}{2}$  x 1 in. .80 Large,  $8\frac{1}{2}$  x 3 x 1 in. 1 00  
 Ditto, for cupels, see Cupel Moulds.  
 \* 6851. Ditto, for pouring of iron, California pattern for double assay ..... 80 cts.  
 6852. Ditto, ditto, ditto, of copper, with 16 cavities ..... \$6 00  
 6853. Ditto, for scorifications, of iron, 6 round holes ..... 60 cts.  
 \* 6854. Ditto, " " " 9 " " ..... 90 cts.  
 6855. Ditto, " " " 12 " " ..... \$1 00  
 \* 6856. Ditto, " " " conical, 3 holes ..... 1 00



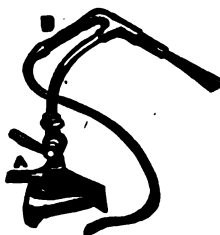
6850



6851



6857



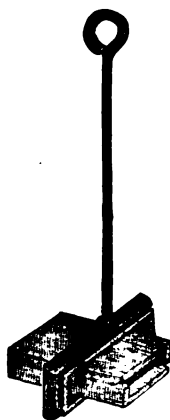
6858



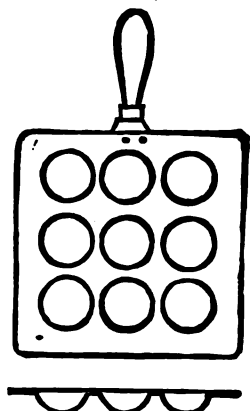
6856



6859



6848



6854

- \* 6857. Ditto, Fletcher's, for obtaining ingots of gold, silver, etc., rapidly without the use of a furnace.  
 Melting arrangement, with both wire and plate moulds ..... \$3 25  
 Stand for melting arrangement ..... 1 00  
 Wire moulds ..... 1 25  
 Plate moulds ..... 1 25  
 Extra car'on crucible, without slides, per doz. .... 1 00  
 " " " with " " ..... 1 75  
 ○\* 6858. Blow-pipe, specially designed for use with the above ingot mould. The air jet is  $\frac{1}{4}$ -inch bore, and requires a supply from a foot-blower, price ..... \$2 25  
 ○\* 6859. Ditto, new form, No. 84, melting arrangement ..... 3 00  
 Ingot mould if ordered separately ..... 1 25  
 6860. Mouthpiece, for the Blow-pipe, large, trumpet, of hard rubber ..... 30 cts.  
 6861. Ditto, ditto, round ..... 25 cts.  
 6862. Ditto, ditto, flat ..... 25 cts.



## MUFFLES.

○\* 6863. a and b. Muffles, to fit the E. & A.'s, Rickett's, Battersea and California assay Furnaces. These are the strongest and most durable muffles made.

Outside measure.	Length.	Width.	Height.	singly.
No. A,	7 in.	3½ in.	2½ in.	.35
B,	7½ "	4½ "	2½ "	.45
C,	8 "	4½ "	3 "	.55
D,	8½ "	5 "	3½ "	.65
E,	9 "	5½ "	3½ "	.70
F,	10 "	6 "	4 "	.80
G,	11 "	4 "	3½ "	.60
H,	10½ "	5½ "	3½ "	.65
J,	12 "	6 "	4 "	.80
K,	14 "	8 "	5 "	\$1 20
L,	15 "	9 "	6 "	1 30
M,	18 "	14 "	7½ "	2 75

\* 6864. Ditto, School of Mines, Columbia College size,  
 Outside measure, Length, Width, Height.  
 4 in. × 5½ in. × 11 in. . . . Each, \$1 10 . . . . Dozen, \$12 50.  
 Outside measure, Length, Width, Height,  
 4½ in. × 5½ in. × 11 in. . . . Each, \$1 30 . . . . Dozen, \$15 00.

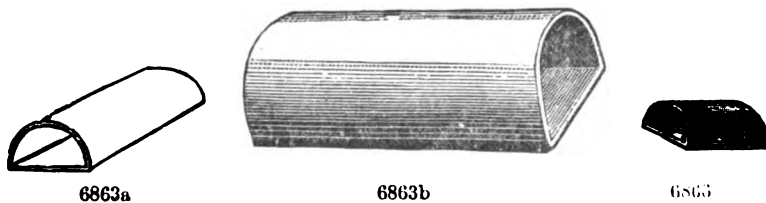
○ 6865. Muffles for No. 1a, 4½x11x3 in. No. 2, 5x10½x4 in. No. 3, 4x8x2½ in.  
 Hibb's assay furnace. \$1 25 1 25 1 50 85 cts.

No. 4, 9x17x5 in. . . . \$2 75. No. 4a, 12x17x6 in. . . . \$3 50  
 Inside measurement.

\* 6866. Ditto, French clay.

No.	1	2	3	4	5	6
Width,	3½	3½	3½	5	5½	6 in.
Length,	4	5	6	6½	7½	8½ in.
Height,	3	3	3½	3½	3½	4½ in.
Each,	.40	.40	.50	.60	.70	\$1 00

Muffles of any size, of best material to order within 20 days; at reasonable rates.



\* 6867. Nickel foil, 0,06 m.m. . . . \$2 50 0,15 m.m. . . . \$2 00 per lb.

Nessler's Jars, (see Jars for Nessler's color test.) Needles, Magnetic, (see Magnetic Needle.)

Nicholson's Hydrometer, (see Areometer) . . . . \$2 00

6868. Nippers, steel, for breaking off small pieces from ores, etc. Plattner's genuine, nickel plated . . . . \$1 50

6869. Ditto, ditto, English make . . . . 1 00

6870. Ditto, for holding buttons, black, 50 cts. Nickel plated . . . . 75 cts.

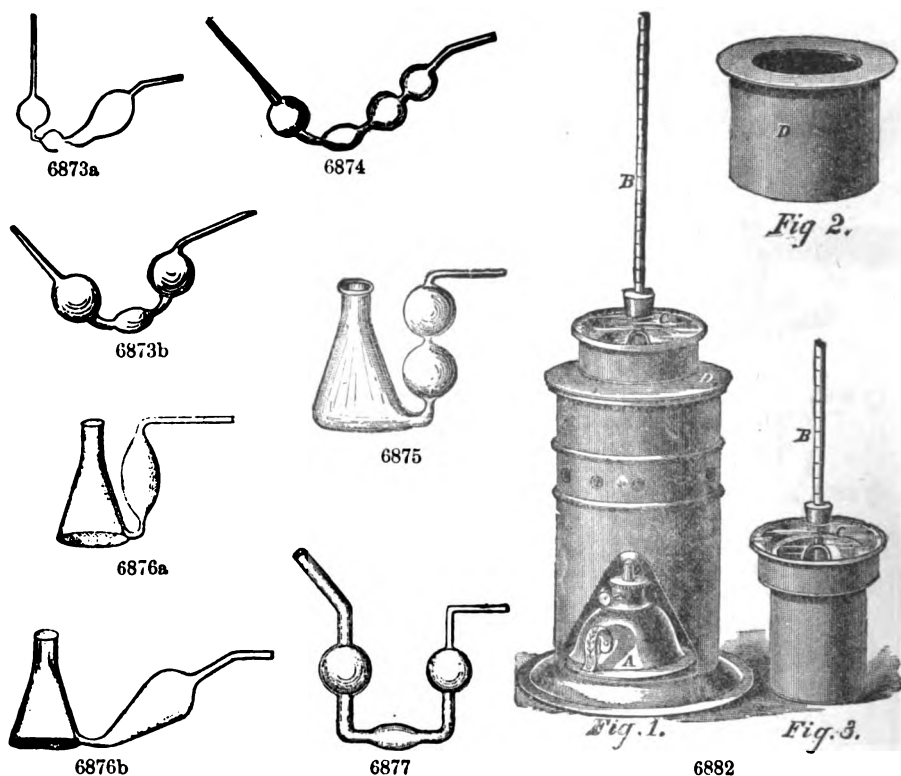
6871. Ditto, black, steel, best quality

4 in.	5 in.	6 in.	8 in.
.25	.30	.40	.60

6872. Ditto, side cutting, with plier, (see pliers).

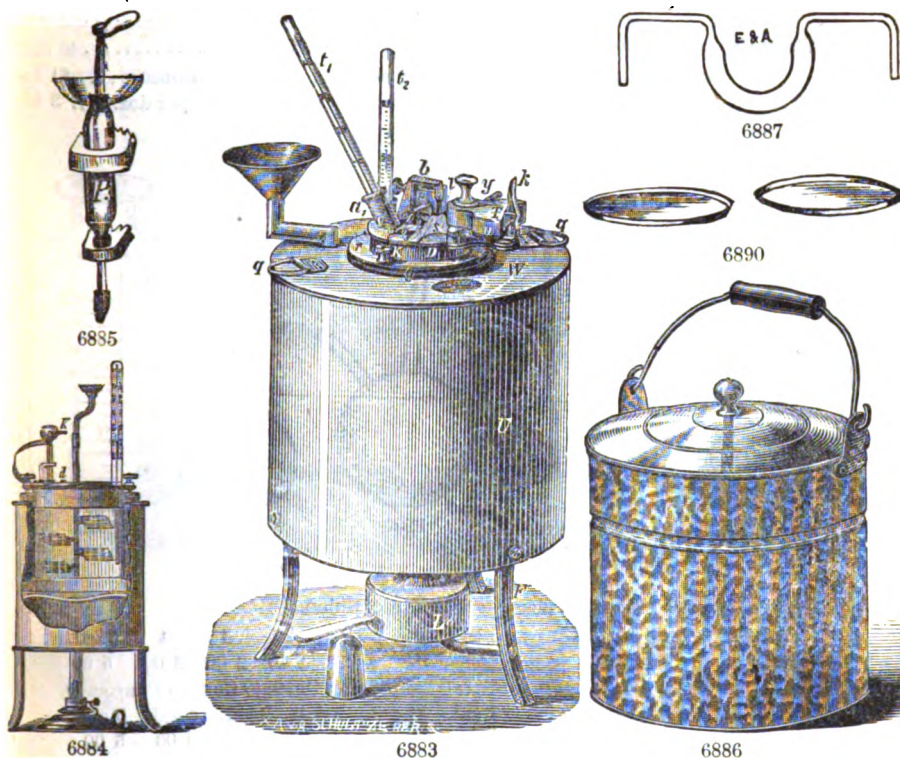
- \*\* 6873. **Nitrogen Bulbs**, 3 bulbs, Will & Varrentrapp, *a* and *b*..... 35 cts.  
 \* 6874. Ditto, ditto, 4 bulbs..... 40 cts.  
 6874a. Ditto, ditto, with small thistle funnel on end to fill ..... extra, 15 cts.  
 \* 6875. Ditto, ditto, W. & V., improved by Fresenius, for direct titration..... 50 cts.  
 \* 6876. Ditto, ditto, Vollhard's, improved, A..... 55 cts. B..... 50 cts.  
 \* 6877. Ditto, ditto, French pattern..... each, 35 cts

**Nitrometer, (see Azotometer.)**



- 6877a. **Normal**, — instruments of most superior workmanship, as Flasks, Cylinders, Hydrometers, Burettes, Pipettes, Thermometers, etc., furnished to order.  
 6878. Note book..... 10 to 25 cts.  
 — 6878a. Numbers, of steel, for marking bullion, see figures.  
 6879. **Oleometer**, for rich or fat oils, with thermometer enclosed..... \$2 50  
 6880. **Oil Reservoir**, Plattner's, for safe transportation of oil for blow-pipe lamp, \$1 00  
 6881. **Ozonometer**, Siemen's, small..... \$3 50. Large..... 5 00  
 — \* 6882. **Oil Tester**, as adopted by N. Y. State Board of Health, and made by E. & A., standard of N. Y. State, Iowa, New Jersey, Michigan, and in general use everywhere, with correct thermometer, arranged for oil lamp ..... \$7 50  
 Arranged with Bunsen's burner, for gas..... 50 cts. extra

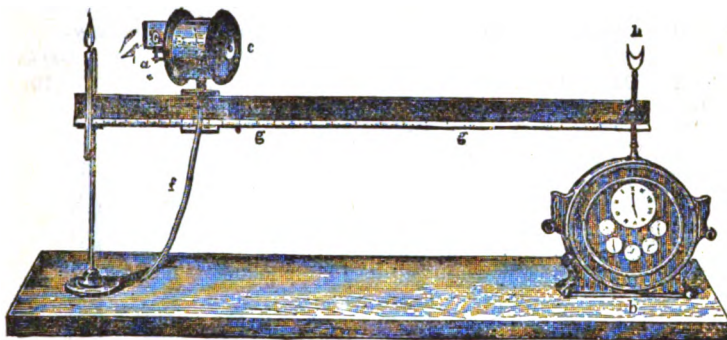
- \* 6383. Oil Tester, Abel's, the one adopted by the German government as standard, complete with barometer.....\$75 00  
(Imported to order only.)
- \* 6384. Ditto, ditto, **Engler's**, Heumann's modification with thermometer igniting flash by electric spark.....\$24 00  
**Oxygen Retorts**, (see Retorts of Copper.) **Oxyhydric Blow-pipe**, (see Blow-pipes.) **Orsat's Apparatus**, (see Apparatus for Gas Analysis.)
- \* 6885. **Overflow Pipette**, plain.....\$1 50 with ground cup.....\$2 50
- \* 6886. **Pails**, for laboratory waste, of agateware, with cover.
- |        |        |        |
|--------|--------|--------|
| 2 gal. | 3 gal. | 4 gal. |
| \$1 20 | 1 50   | 2 10   |



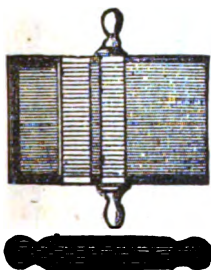
- \* 6887. **Palladium Tube**, Hempel's, for **H** absorption, filled..... 2 00  
**Palette Knives**, (see Spatulas.)
6888. **Pans**, horn, for hand-scales. Each pair, with green silk strings.
- |           |     |     |     |     |     |        |      |         |
|-----------|-----|-----|-----|-----|-----|--------|------|---------|
| Diameter, | 1   | 2   | 2½  | 3   | 3½  | 4      | 4½   | 5 inch. |
| Price,    | .25 | .35 | .50 | .60 | .80 | \$1 00 | 1 20 | 1 50    |
6889. Ditto, ditto, for saddle scales.
- |            |         |             |         |            |         |
|------------|---------|-------------|---------|------------|---------|
| Small..... | 35 cts. | Medium..... | 50 cts. | Large..... | 60 cts. |
|------------|---------|-------------|---------|------------|---------|
- \* 6890. Ditto, rubber, for Mohr's balances, diameter 5 inch, per pair.....\$1 00  
Ditto, of Russian sheet iron, etc., for gold washing, (see Gold Pans).  
**Paper Filtering**, (see Filtering Paper.)
6891. **Paper**, white, glazed, black or colored, quire.....40 cts.
6892. Ditto, Litmus, blue and red, quire.....75 cts.
6893. Ditto, parchment, for dialysing and capping, light and heavy, per lb. .... 45 cts.
6894. Ditto, turmeric and other test papers, as Brazil-wood, logwood, and iodide potash, etc., etc., quire. (See also Test Papers.).....\$1 00
6895. Ditto, Japanese, quire.....25 cts.
6896. **Parting Flasks**, best Bohemian glass, (see Flasks for Assaying.)



- \* 6913. Photometer, simple form ..... \$85 00  
 6914. Piano steel wire, per  $\frac{1}{4}$  roll ..... 35 cts.  
 Picnometers, see Bottles for Specific Gravity.
- \* 6915. Pill Boards, brass, on fine pear wood, German, for 30, 1 grain pills ..... \$3 75  
 6916. Ditto, ditto, " " " " " 2 " ..... 3 75  
 6917. Ditto, ditto, " " " " " 3 " ..... 4 00  
 6918. Ditto, ditto, " " " " " 4 " ..... 4 50  
 6919. Ditto, ditto, brass, of fine pear wood, German, for 25, 5 grain pills ..... 5 00  
 6920. Ditto, ditto, of brass, fine pear wood, reversible for two grains and 4 grains pills.  
 Price ..... \$7 00  
 6921. Ditto, ditto, American, with rollers, for 24-2, 3, 4 or 5 grain pills ..... 7 00  
 6922. Ditto, ditto, of iron, for 2 grains pills ..... \$3 50. 4 grains ..... 3 75  
 6923. Ditto, ditto, of hard rubber, for silver pills, etc., for 30-2 grain pills ..... 3 50  
 6924. Ditto, ditto, reversible for 2 and 4 grain pills ..... 6 00
- Pill Boxes, (see Boxes.)
6925. Pill Rollers, of polished wood, each ..... 25 cts.  
 6926. Pill Silverer ..... 50 cts.



6913



6915



6927



6929



6932

- \* 6927. Pill Tiles, graduated, porcelain.
- | 4x4 | 5x5 | 6x6 | 8x8 | 10x10  | 12x12 | 6x8 | 8x10 inches. |
|-----|-----|-----|-----|--------|-------|-----|--------------|
| .40 | .40 | .50 | .75 | \$1 20 | 2 00  | .75 | 1 20         |
6928. Pinch-cocks, Bunsen's, with 2 screws ..... 50 cts.
- \* 6929. Ditto, ditto, Mohr's, brass, nickel plated.
- | Small   | Medium  | Large   | Extra large |
|---------|---------|---------|-------------|
| 10 cts. | 15 cts. | 20 cts. | 25 cts.     |
- Double extra large ..... 50 cts.
6930. Ditto, ditto, with glass end and rubber attachment, for burettes.
- | Small   | Medium  | Large   |
|---------|---------|---------|
| 18 cts. | 20 cts. | 25 cts. |
6931. Pinchcock with set screw ..... 30 cts.
- \* 6932. Ditto, Hofmann's, with screw arrangement.
- | Small   | Medium  | Large   |
|---------|---------|---------|
| 20 cts. | 25 cts. | 30 cts. |

- \* 6933. Pinchcock, screw, Hofmann's style, improved by E. & A. This is the most perfect and most useful screw pinchcock ever constructed, it can be applied without disconnecting. Each ..... 30 cts.  
All our pinch-cocks, etc., are made of brass, nickel-plated and will not corrode in the laboratory. See clamps for full description of pinch-cocks.
6935. Pipes, of common clay, per doz. .... 25 cts.

## PIPETTES.

6936. Pipettes, straight, drawn to an end, not fixed.

Length,	5	6	7	8	10	12	15	20 in.
	.4	.5	.5	.6	.7	.8	.10	.12 cts.

6937. Ditto, ditto, with rubber bulb. 5 in. .... 10 cts. 10 in. .... 12 cts. 15 in. .... 15 cts.

\* 6938. Ditto, not fixed, round or long bulb.

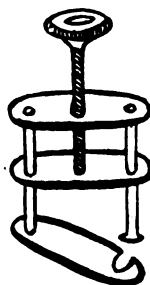
Capacity about,	5 CC.	10 CC.	25 CC.	50 CC.	100 CC.	200 CC.
	.10	.15	.20	.25	.30	.50

\* 6939. Ditto, with bent bulb. .... each, 5 cts. extra.

\* 6940. Ditto, volumetric graduated, fixed, most accurately.

1	2	3	5	10	12½	20	25	50	100	200 CC.
.10	.12	.14	.18	.20	.25	.25	.30	.40	.50	.70

6941. Ditto, graduated, fixed.  $\frac{1}{2}$  1 2 drams.  
.20 .25 .30 cts.



6933



6939 6938



6940



6943



6944

6942. Ditto, graduated, in minims, 30 ..... 25 cts. 60 minims ..... 35 cts.

\* 6943. Ditto, Mohr's, straight, graduated in parts of cubic centimeters.

1 CC. in 1-100	5 CC. in 1-20	10 CC. in 1-10	10 CC. 1-20	20 CC. in 1-10
.40	.50	.55	.60	.70 cts.

25 CC. in. 1-10	50 CC. in. 1-5	50 CC. in. 1-10	100 CC. in. 1-5
.80	\$1 10	1.25	2 00

\* 6944. Ditto, measuring; with glass stop-cock.

Capacity,	10	25	50	100 CC.
Graduated into,	1-10	1-10	1-10	1-5 CC.
Price,	\$1 50	1 75	2 00	2 50 each.

- Pipettes with rubber bulb.....from 10 to 50 cts. extra.
- \* 6945. Ditto, overflow, according to Prof. Rickett's, silver assay full, 100 CC.  
cup ground on top See fig. 6885.....\$2 50 Plain... 1 50
- \* 6947. Ditto, Etting's, gas, glass. See fig. 6503. Small.....70 cts. Large.....85 cts.
- Other Pipettes, (see Gas Pipettes).
- Pipette Stands, (see Supports.) Pipettes, with ground glass stop-cock, (see Burettes.)
- Pitcher, for Acid, (see Acid Pitchers.)
6949. Pith Balls, dozen..... 25 cts.
- \* 6950. Plates, with rubber, of chilled iron, (see Prof. Rickett's notes on assaying), improved form with high rim for crushing and grinding ore. The operation is done more rapidly than in the ordinary mortar and pestle style. Rubber set in wooden handle.
- |          |         |       |       |
|----------|---------|-------|-------|
|          | Size,   | 18x24 | 24x36 |
| Complete | \$ 9 00 | 15 00 |       |
- Plates of glass, (see Glass Plates.)
- 6951. Plates, of porcelain.
- |  |     |     |     |        |      |                   |
|--|-----|-----|-----|--------|------|-------------------|
|  | 4   | 5   | 6   | 8      | 10   | 12 inches square. |
|  | .30 | .50 | .75 | \$1 00 | 1 25 | 1 50              |
- \* 6952. Ditto, of porcelain, with cavities for color reactions, or as convenient receptacle for small weights.....65 cts.
- \* 6953. Ditto, of porcelain, unglazed, for mineralogists, so-called streak plates. Each.....25 cts.
- See also Streak Plates.



6950



6952



6953

## PLATINUM

*In any shape, size and quantity, for Laboratories and Factories.*

What we claim for our Platinum ware is: that it consists of **chemically pure platinum** only, containing no iridium, etc., as absolutely pure platinum alone has those qualities which make it so valuable and indispensable to our chemists and manufacturers of chemicals.

Every Crucible and every Dish from this establishment IS SOLD UNDER GUARANTEE to the purchaser. We carry the heaviest stock of ready made ware in this country; special apparatus furnished to order at shortest notice. The shape and make of our ware is superior to any other.

ALL OUR WARE IS HAMMERED (chased) and not spun, which is of greatest importance, as it will stand usage twice as long as spun ware. Using only the purest platinum, OUR CRUCIBLES WILL NOT BLISTER. Prices are charged as low as possible according to the market value of platinum, plus work in addition, and special rates will be given for large orders. Worn out vessels of our platinum exchanged for new ones or bought back at highest rates.

All platinum vessels are sold by actual weight and value of Platinum and not by the piece.

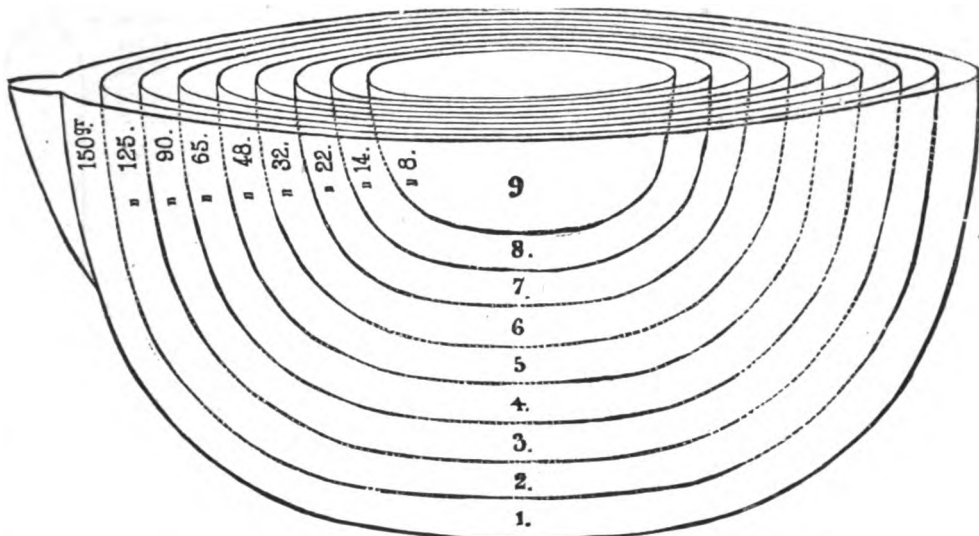
- 6954. Platinum sheet, for Retorts, Crucibles, Dishes, etc., per gramme... 80 cts.



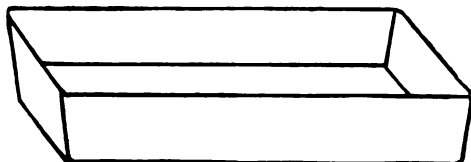


- \* 6972. Crucibles, with covers, (our Crucibles weigh, covers included, about as many grammes as they hold CC), figures are full size, No. 1 to No. 7, per grm. . 82 cts. Besides above, we also have crucibles holding 60 and 75 C.C. always on hand. Larger sizes to order.

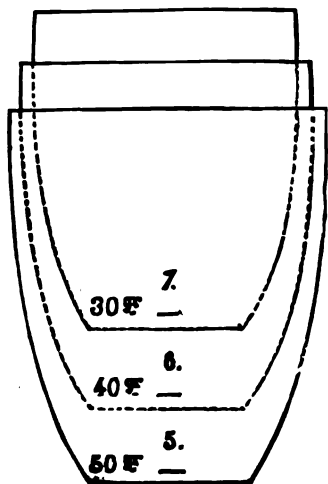
6972a. The wide German form furnished to order. Only the 12 CC. kept in stock.



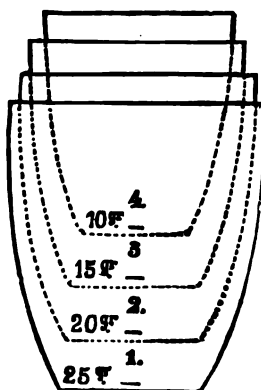
6973



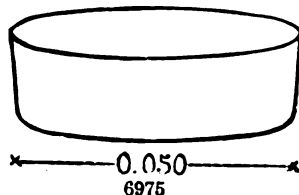
6974



6972



6972



6975

- \* 6973. Dishes, of Platina, with large good pouring lip, figures full size, with the approximate weight of each, size No. 1 to 9, per gramme..... 82 cts.

No.	1	2	3	4	5	6	7	8	9
Capacity about,	400	370	270	200	125	80	45	30	20 CC.

Larger sizes to order. The weight given above is for regular stock. We also furnish a lighter weight if so ordered.

- \* 6974. Dishes, for incineration of filters, square or oval, per gramme..... 82 cts.

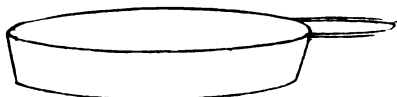
Weight about, 10,0 20,0

No. 1 2

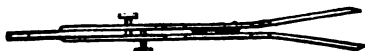
Diameter, 1½ in. 2 in.

- \* 6975. Dishes, for sugar analysis, with or without handle, per gramme..... 82 cts.

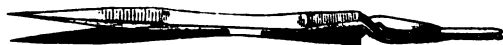
- \* 6976. Platina Dishes, for milk analysis, with or without lip and handle, 2 in. diameter, weight from 10.0 to 15.0, per gramme ..... 82 cts.
- 6977. Platina Dishes, small, flat, for blow-piping,  $1\frac{1}{2}$  in. outside, 1 in. inside, weight, about 5.0 per gramme ..... 85 cts.
- \* 6978. Platina Combustion Tubes,  $\frac{1}{4}$  in. bore, body from 10 in. to 30 in. long, with ground joint, all platinum or collar of German silver, weight 50.0 to 200.0, per grm ..... 85 cts.
- 6979. Platinum Funnel for same, per gramme ..... 85 cts.
- 6980. Platinum filter, arrangement for carbon determination, per grm 85 cts.
- 6981. Platina Filter, designed by Mr. P. Casamajor, a perforated platina plate, with tube, according to size and weight, per grm. 85 cts.
- \* 6982. Platina Forceps, Plattner's, nickel plated, platina plates, heavy \$3 00
- \* 6983. Ditto, ditto, French style, heavy plates..... 3 00



6976



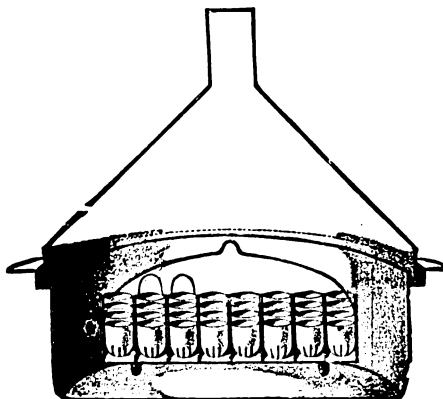
6982



6983

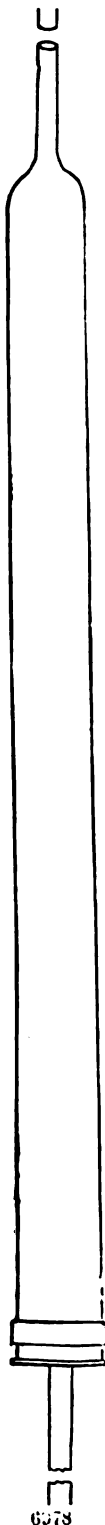


6981



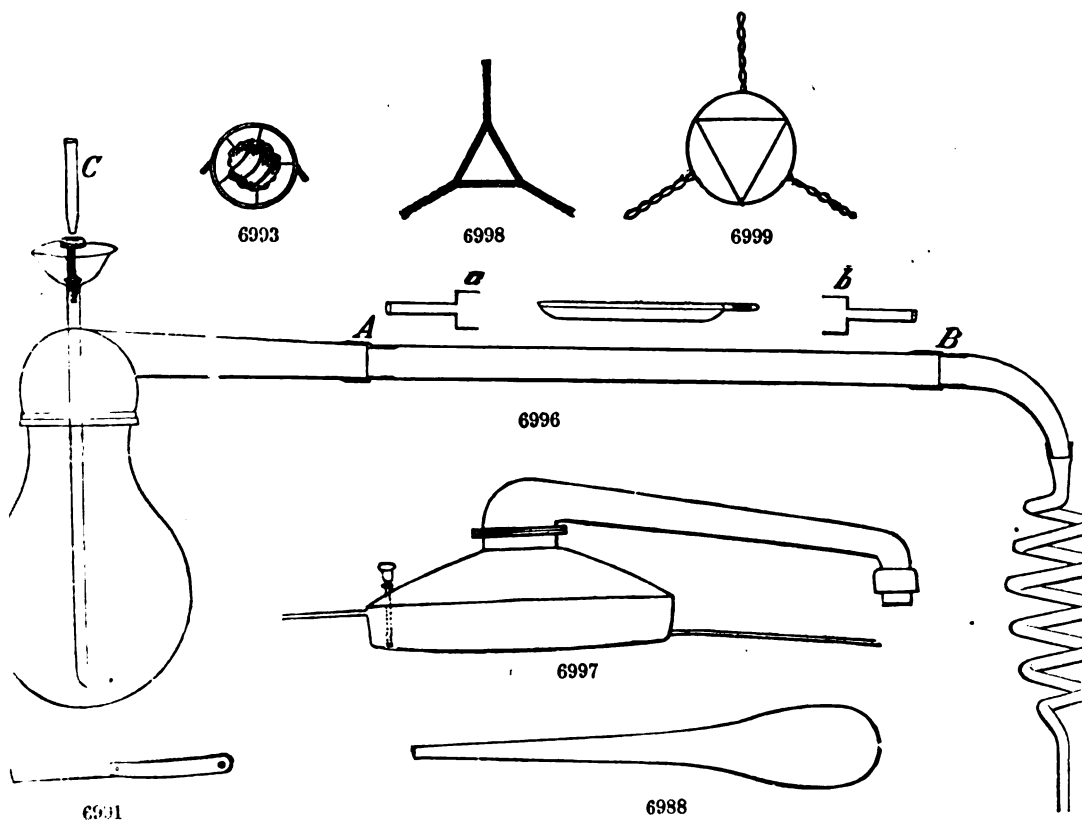
6987

- \* 6984. Platina Spoons, in 4 sizes, diameter of cup,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  in., according to weight. \$1 00 to 4 00, or per gramme, 85 cts.
- 6985. Platinum Bottles, with ground-in stoppers for hydrofluoric acid, etc., capacity, 50, 100, 250 CC. Weight about 50, 100, 250 grms.  
Per gramme..... 85 cts.
- 6986. Platinum Muffle, Scheibler's, for incinerations, etc.  
Width, Height, Length, Weight,  
2 in. ×  $1\frac{1}{2}$  in. ×  $4\frac{1}{2}$  in. 30 0 to 50,0.  
Per gramme ..... 85 cts.
- 6986a. Support for same, with platina wires..... \$4 00
- \* 6987. United States Mint parting and assaying apparatus with 20 to 32 corners.  
Weight from 350 to 600.0, per gramme ..... 85 cts.



6978

- \* 6988. Platina **Spatulas**, all platina, length, 3 and 4 inches, weight, 4.0 to 8.0, per gramme ..... 85 cts.
  - 6989. Platina rod or spatula fused in glass handle, as stirrer, etc., according to weight. Price ..... \$2 00 to 5 00
  - \* 6991. Spatula, with buffalo handle, folding like a knife.  
Small, about.....\$7 00, Medium, about... \$9 50. Large, about... \$12 00  
According to weight.
  - 6992. Platina **Spiral**, hollow, for hydrogen determination, about 30.0.  
85 cts. per 1.0
  - \* 6993. Platina **Sponges**, each ..... 25 cts. Per doz ..... 2 75
  - 6994. Ditto, spongy. .... 82 cts. per gramme.
  - 6995. Ditto, reduced, fine powder, c. p., s. o. Mohr's black, dram.... 1 05 per gramme.
- Platinum Salts, see our list of Chemicals.

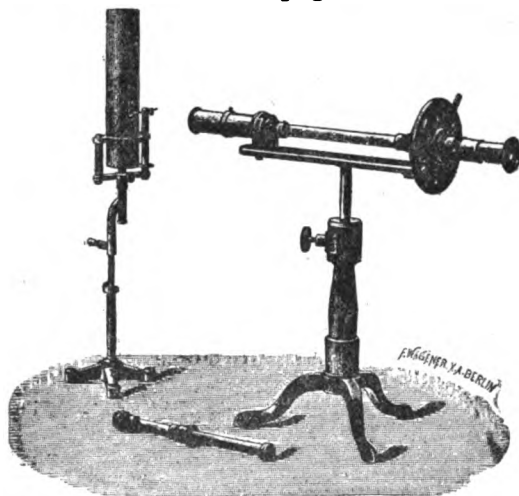


- \* 6996. Platina stills and condensing worm, for manufacturing c. p. hydrofluoric acid in small quantities, combined with combustion tube, total weight, 300.0 to 400.0, at 85 cts. per 1.0.
- \* 6997. Platina **Stills, Retorts, etc.**, to order for manufacturing chemists, according Faure and Kessler, etc., patents at the lowest market rates.  
Besides above platina apparatus we have facilities for making apparatus of platinum of any description.
- Old Platinum Retorts, Dishes, Scrap, etc., bought or exchanged at the full value.
- 6997a. Scrap sold, per gramme ..... 70 cts.
- \* 6998. Platina **Triangles**, solid wire, to fit the crucibles, per gramme..... 82 cts.
- \* 6999. Ditto, ditto, Fresenius' Style, according to weight of platinum.... \$4 00 to 6 00



- 7013. **Polariscope, (Soleil-Scheibler), for polarization of sugar and molasses, with 1.100 m. m. and 1.200 m. m. tube.** In a neat mahogany case, with lock and key. Dr. Scheibler's successor whose reputation as an expert in sugar analysis is world-wide, tests each one of these instruments before sending it out, and guarantees its utmost accuracy. (This is the U. S. Standard for import sugars).....\$160 00
- 7014. Ditto, ditto, **Schmidt & Haehnsch's make, otherwise same as above, with attest of correctness and mirror attachment**.....\$166 00
- 7015. Ditto, ditto, **Schmidt & Haehnsch's patent shade, latest construction, with Lippich's Polarizer, and new reading arrangement, with 400, 200 and 100 m. m. tubes, complete in case**.....\$294 00
  - Protection cap for double wedge compensation, extra..... 15 25
  - Bock stand with glass shade, extra..... 21 00
- 7016. Ditto, (Saccharimeter), according to Laurent, grand model..... 175 00
  - Taking Tubes, 200, 300, 400 and 500 m. m. long.
- 7018. Set of 4 tubes..... 35 00
- 7019. Burner for sodium light, with platina baskets and salt..... 15 00
- 7019b. Burner for alcohol..... 20 00

**For latest forms see pages 310 & 392.**



7020

- \* 7020. **Polariscope, Mitscherlich's half shade, with Laurent's Polarizer, reading 0.1° with 2 glass tubes 94.7 and 189.4 m.m. and Sodium gas lamp**.... \$63 00
- 7021. The same instrument with Barthel's alcohol sodium lamp.....\$ 65 00
- 7023. Polariscope, after Mitscherlich, simple form, with one 200 millimeter tube 27 00
- 7024. Polaristrobometer, according to H. Wild, large model..... 126 00
- 7025. Ditto, ditto, ditto, small model..... 60 00
- 7026. **Complete sugar outfit see appendix.**
- 7027. **Polarization Tubes, for the above instruments, 100 m.m. and 200 m.m. long.** These tubes are made in the best manner, and their length accurately adjusted.....\$3 50. Not mounted.....\$1 00
  - 7028. Ditto, ditto, of metal..... 5 00
  - 7028a. Ditto, ditto, of glass, so called conversion tubes, with center tubes for thermometer, plain..... 2 00
    - Mounted..... 5 00
  - 7029. Ditto, ditto, glass covers for, per doz ..1 00. Schmidt & Haensch's genuine 1 75
  - 7030. Ditto, ditto, rubber washers for, per doz.....20 cts.

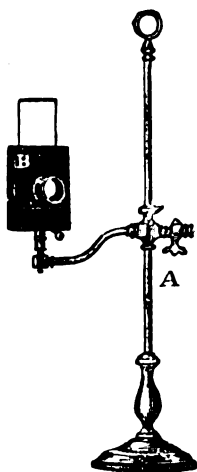
- \* 7031. **Polariscope Lamp**, for gas, nickel plated, light weight with clay cylinder ..... \$8 00. Brass ..... \$7 50
7032. Ditto, ditto, extra heavy. .... \$10 00
7033. Ditto, ditto, for kerosene, with clay cylinder, nickel plated, \$8 00 Brass. .... 7 50
7034. Ditto, ditto, **after Hink**, with triple burner for gas, the best polariscope lamp known ..... \$15 00
7035. Ditto, ditto, for kerosene ..... 12 00
- 7036. Polariscope **Quartz Testing Plates** mounted, for adjusting the instrument. These are made and tested by Dr Scheibler who guarantees the absolute accuracy of each one. Per pair (about 50° and 100°) ..... \$21 00, or singly, 10 50
- 7036a. **Porcelain Colors**, a series of colors, burnt on a porcelain plate, for color comparison ..... \$3 00

\* 7037. **Porous Cups** or cells, for batteries.

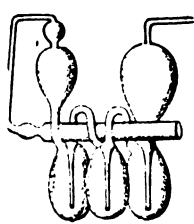
Diameter,	1½	2	2	2½	2½	2½	3½	3½	4 in.
Height,	3	3	3½	4½	4½	6	3½	5½	7½
Price,	.15	.15	.17	.20	.22	.25	.18	.25	.30
								.30	.75 cts.

Any size to order but not less than 100 at a time.

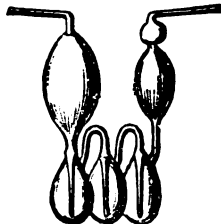
7038. Ditto, ditto, flat, for Tyndal's Battery, 4½x2½x½ in. .... 30 cts. Dozen ..... \$3 00
7039. Ditto, ditto, Groves, with flange on top ..... 15 cts. Dozen ..... 1 50



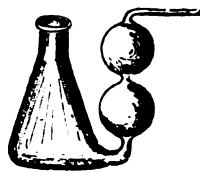
7031



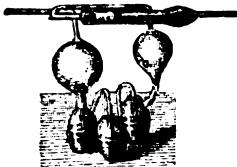
7042



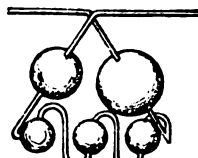
7044



7046



7041



7048



7049



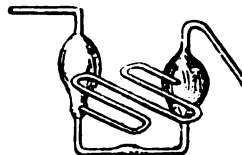
7051



7040



7045



7047

- \* 7040. **Potash Bulbs, Liebig's form**, each ..... 50 cts.
- \* 7041. Ditto, ditto, **Geissler's, modified by Winkler**, with drying tube attached. Price ..... \$1 20
- \* 7042. Ditto, ditto, drying tube between the bulbs ..... 1 20
- \* 7043. Ditto, ditto, with ground joint ..... 1 50
- \* 7044. Ditto, ditto, **Mohr's**, upright ..... 85 cts.
- \* 7045. Ditto, ditto **Mitcherlich's**, 3 different styles, a, b, with enlarged side tube, c, with curved side tubes between the bulbs ..... 50 cts.
- \* 7046. Ditto, ditto, **Volhard's**, (see Winkler's Gas Analysis,) improved by Fresenius. Price ..... 5 cts.
- \* 7047. Ditto, ditto, according to Schloesing ..... 75 cts.
- \* 7048. Ditto, ditto, **Alvergnat's** ..... 85 cts.
- \* 7049. Ditto, ditto, spiral form, Winkler's, small ..... 75 cts. Medium ..... \$1 25
7050. Ditto, ditto, extra large ..... 2 25

**Pouring Plates**, (see Moulds.)

\* 7051. **Precipitating Jars**, with lip.

$\frac{1}{4}$ pint	$\frac{1}{2}$ pint	1 pint	1 quart	$\frac{1}{2}$ gal.	1 gal.	2 gals.	3 ga's.
.20	.25	.35	.50	.75	\$1 10	2 00	3 50

**Precipitating Glasses**, (see Test Glasses), **Preparation Glasses**, (see Specimen Tubes and Anatomical Jars).

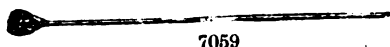
— \* 7052. **Presses**, for pressing out herbs, tinctures, etc.

Capacity,	1 quart,	$\frac{1}{2}$ gal.	1 gal.	2 gals.
Price,	\$3 00	3 50	6 00	10 00

— 7053. **Ditto**, for pressing small quantities.

No. 1	2	3
\$1 25	1 50	2 00

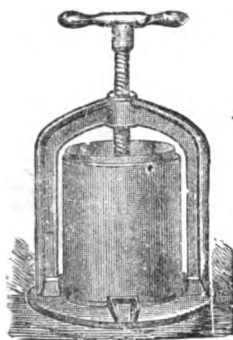
**Presses for corks**, iron (see Cork Presses.)

\* 7054. **Pressure Bottles**, of heavy glass, with screw pressure arrangement on brass stand, small..... 2 75    Large..... 3 00

7059



7055



7052



7054



7056



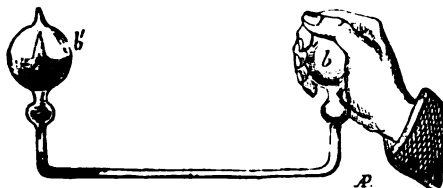
7051



7062



7063



7061

\* 7055. **Prisms**. Crown Glass, angle 60 degrees.

4	5	6	7	8 inch.
.40	.50	.60	.75	1 00

\* 7056. **Ditto**, indigo, wedge shape.....\$1 757057. **Ditto**, Bisulphide of Carbon, iron case, glass fronts..... 3 00

Set of 2, on board..... 7 50

7058. **Ditto**, all glass, small.....\$1 75. Large..... 2 50\* 7059. **Probangs**, for cleaning test tubes, etc., a rod of rattan, with sponge end.. 8 cts.7060. **Ditto**, ditto, on whalebone..... 10 cts.

**Proof Glasses**, (see Hydrometers.)

○ 7061. **Pulse Glasses**, small,.....40 cts. Large..... 75 cts.

**Pump**, Bunsen's, (see Filtering Pump.)

\* 7062. **Pump**, Lifting, working model of; the whole made of glass..... 1 50

Ditto, ditto, on support, with reservoir..... 3 38

\* 7063. **Pump**, Lifting and Forcing, working model of; made entirely of glass.....\$1 75

Ditto, ditto, on support, with reservoir..... 3 50

- \* 7064. **Push Buttons**, for electric bells, wood or porcelain.....25 cts.  
 7064a. Nickel plated or ornamented porcelain.....40 cts.  
 7064b. Fancy push buttons. ....50 to 75 cts.  
**Quartz Plates**, for testing and adjusting the Polariscope, (see Polariscope.)  
**Qualitative Blow-pipe Set**, (see Blow-pipe Apparatus, Appendix.) **Qualitative Chemical Set**, (see Appendix.)  
 — 7065. **Pyrometer**, of metal, with registering gauge, up to 1500° F. 5 inch.... \$26 00  
 — Ditto, ditto,.....7 inch.... 30 00  
 \* 7065a. **Radiometers**, Crook's.....\$3 00 to 5 00  
**Rasps**, (see Files.)  
 — 7066. **Re-agents**, set of 54 liquid and 18 solid re-agents, all chemically pure, according Fresenius, see there, page 14. 4 oz. capacity each, except the more expensive where smaller quantities are given.....\$25 00  
 — 7067. Ditto, 8 oz. each, except the most expensive where smaller quantities are given. Price.....\$35 00  
 7068. Bottles for above will be charged according to style. For quality and prices, see Bottles.

We recommend as the best those with the enameled labels or the Bohemian polished top, stoppered bottles.

Other re-agents, (see our list of Chemicals.)

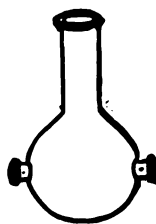
Re-agent Glasses, (see Test Glasses and Test Tubes.)



7064



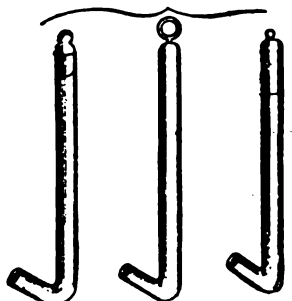
7065a



7069



7070



7074c

7074b

7074a



7073



7071



7072

- \* 7069. **Receivers**, glass, with 3 tubulus.  $\frac{1}{2}$  pint. .65 1 pint .70 1 quart. \$1 00  
 \* 7070. Ditto, ditto, quilled.  $\frac{1}{2}$  pint. .65 1 pint .75 1 quart. \$1 10  
 \* 7071. Ditto, for retorts, imported glass, plain.  
 1 oz. .11 2 oz. .12 4 oz. .15 6 oz. .18 8 oz. .22 16 oz. .28 1 quart. .35  $\frac{1}{2}$  gal. .45 1 gal. .75 2 gals. \$1 25  
 \* 7072. Ditto, ditto; tubulated and glass-stoppered.  
 1 oz. .20 2 oz. .20 4 oz. .25 6 oz. .30 8 oz. .45 1 pint. .55 1 quart. .65  $\frac{1}{2}$  gal. .70 1 gal. \$1 00 2 gals. 1 50  
 Ditto, for air pumps, (see Bell Glasses.)  
 \* 7073. Ditto, with extra in and out flow to control small alcoholic distillations, also as dripping glass for acid, with base, ... 5 6 7 8 10 12 inches  
 .50 .55 .60 .70 .75 \$1 00  
 Hydrometer for the same, from 0.700 to 0.850 or 1.00 to 2.00, or parts...each, \$1 00  
 \* 7074. Ditto, Cooper's, mercurial, glass, a b c  
 .25 .35 .50 cts.



**Reduction Tubes, (see Bulb Tubes) Reduction Crucibles Rose's (see Crucibles)**

7075. Regulating or Leveling Disc, used for leveling the hydrometer, cylinder, etc. \$4 00  
Other Leveling Tables, see under Bacterioscopic Apparatus.

Rhumkorff's Coils, (see Induction Coils.)

\* 7076. Rests, of porcelain, for pipettes, glass stirrers, etc. 65 cts.

\* 7077. Retorts, copper, for making oxygen, with iron clamp and copper delivering tube, fitted by ground joint.

	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$ gal.
	\$1 80	2 00	2 50	3 00

\* 7078. Ditto, fitted with ring stand, Berzelius' lamp and rubber tube. See fig. 5207.

\* 7079. Ditto, of iron, for making oxygen, etc., as recommended by Prof. Morton, absolutely secure against severe accident, complete to make 40 gallons gas. \$2 00

7080. Ditto, of copper. 4 00

\* 7081. Ditto, of iron, new form, see figure 5214, for gradually generating oxygen.  
 $\frac{1}{2}$  gallon size  $3\frac{1}{2} \times 20\frac{1}{2}$  in., with movable cover, clamp and exit tube. \$4 00  
Folding support for same. 1 00

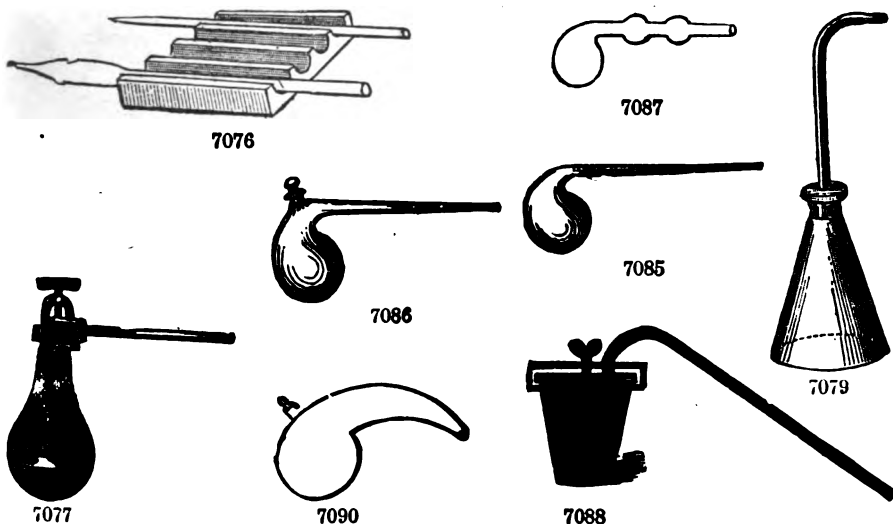
\* 7082. Ditto, of copper, tin lined, for distilling water and alcohol, (see Figure 5193), retort alone.

Contents,	$\frac{1}{2}$ gal.	1 gal.	2 gal.	3 gal.	5 gal.
	\$5 00	6 00	8 00	10 00	13 50

7083. Ditto, of copper, tin lined, according to Proctor.

	1 gal.	2 gal.	5 gal.
	\$8 00	13 50	23 50

Of the 1 gal. the condenser is \$3 50 extra, 2 and 5 gals. are with condenser on top.



\* 7085. Retorts, glass, plain, best Bohemian.

1	2	4	8	16 oz.	1 qt.	$\frac{1}{2}$ gal.	1 gal.	$1\frac{1}{2}$ gal.	2 gal.
.11	.12	.15	.22	.28	.35	.45	.75	\$1 00	1 25

\* 7086. Ditto, ditto, with glass stopper best Bohemian.

1 oz.	2 oz.	4 oz.	8 oz.	12 oz.	16 oz.	1 qt.	$\frac{1}{2}$ gal.
.20	.20	.25	.30	.40	.45	.55	.70 cts.
1 gal.	$1\frac{1}{2}$ gal.	2 gal.	$2\frac{1}{2}$ gal.	3 gal.	5 gal.	8 gals.	
\$1 00	1 25	1 50	2 25	2 50	4 50	6 00	

\* 7087. Ditto, for generating oxygen, of infusible Bohemian glass.

	2	4	8 oz.
	.55	.65	.75

\* 7088. Ditto, iron, for distilling mercury, etc., cover movable, fastened by screw clamp, delivering tube ground into the cover.

$\frac{1}{2}$ pint.	$\frac{1}{2}$ pint.	1 pint.	1 quart.	$\frac{1}{2}$ gal.	1 gal.
\$1 75	2 00	2 50	3 00	4 50	6 50

7089. Ditto, of iron, for oxydizing phosphorus, steam distillation, etc., with steam inlet, steam outlet and feed hole.  $\frac{1}{2}$  gal. \$10 00 1 gal. 14 00

\* 7090. Ditto, porcelain, tubulated, glazed inside, imported.

	4 ounce.	8 ounce.	16 ounce.
Saxony,	\$1 50	2 00	2 75
Royal Berlin,	2 25	2 75	3 25 glazed in and outside.

- \* 7091. **Retorts, tubulated and stoppered, of best German stoneware.**  
Capacity,  $\frac{1}{2}$  gal.  $\frac{1}{2}$  gal.  $\frac{1}{2}$  gal.  $\frac{1}{2}$  gal.  $\frac{1}{2}$  gal. 1 gal. 1 $\frac{1}{2}$  gal. 1 $\frac{1}{2}$  gals.  
Price, \$1 25 1 40 1 55 1 70 2 15 2 65 3 00 3 75 each.
- 7092. Ditto, earthen, Battersea, tubulated and stoppered.  
Contents, 1 quart. 2 quarts. 4 quarts. 6 quarts. 8 quarts. 16 quarts  
Price, 1 60 2 30 3 10 3 75 6 25 9 00
7093. Ditto, of best French platinum, imported to order at lowest rates, according to the market value of platinum (see Platinum.)
- \* 7094. Ditto, of lead, deep or flat form, for manufacturing hydrofluoric or sulphurous acid.  
1 pint. 1 quart.  $\frac{1}{2}$  gal. 1 gal. 2 gal. 5 gal.  
\$5 00 7 00 10 00 12 00 15 00 25 00
- Retort Stands, (see Supports.)**
7095. **Riders, of aluminum or platinum, for analytical balances, 2, 10 and 12 milligr.**  
Each..... 25 cts.
7096. **Rings, of iron, concentric, to fit in tripods, etc.,**  
3 in set. 6 in set.  
Outside diameter, Smallest. Largest. Smallest. Largest.  
 $3\frac{1}{2}$  in.  $6\frac{1}{2}$  in. 25 cts.  $3\frac{1}{2}$  in. 12 in. 50 cts.
7097. Ditto, extension, to fit on any iron ring stand, complete with fastener, (see Figure 8217.) Small..... 30 cts. Medium..... 35 cts. Large..... 45 cts.
7098. Ditto, of iron, in sets to suit, 2 ring, 3 ring, 4 ring retort stand.  
Per set, .30 .45 .60



7091



7094



8001



8002

7099. Ditto, concentric, of copper, tinned inside, for water baths, etc.  
Size of largest, 4 5  $5\frac{1}{2}$  6 8 10 in. outside diameter.  
Number in set, 4 4 5 5 6 7  
Price, .45 .50 .60 .70 1 00 1 50
8000. Ditto, of porcelain, concentric, per set of 5, with cover for 6 in. copper water bath.  
Price..... \$1 00
- \* 8001. Ditto, set of 6, with cover for 8 in. water bath..... 1 50
- Rings, made of straw, to support retorts, dishes, etc., (see Straw Rings.)**
- \* 8002. **Roasting Dishes, of best French clay.**  
Diameter, 2 5 4 5 6 in.  
Dozen, .90 1 20 1 50 2 00 2 70
- 8003. Ditto, ditto, of the Battersea Works, London.  
No. 1 2 3 4 5 6  
Diameter,  $2\frac{1}{2}$  3 4 5 6 7 in.  
Per dozen, .65 .80 .90 \$1 10 2 10 2 75
- Larger sizes to order.**
8004. **Rods, glass, German, in 6 ft. lengths, per lb..... 50 cts.**
8005. Ditto, ditto, American, in 6 ft. lengths, per lb..... 45 cts.
8006. Ditto, ditto, assorted sizes, for stirring, pointed on one side, and smoothed on the other, per lb..... 60 cts.
- 8006a. Ditto, ditto, extra heavy,  $\frac{3}{4}$  to 1 $\frac{1}{2}$  inch diameter, for factory use, 24 to 40 inch long, per lb..... 40 cts.
8007. **Rotators, for Geissler's tubes, each..... \$8 00**  
Extra large..... \$12 00
- Rules, (see Measures).**

## RUBBER.

8007a. Rubber caps for test tubes,  $\frac{1}{8}$  and  $\frac{1}{4}$  inch diam. .... doz. 40 cents.

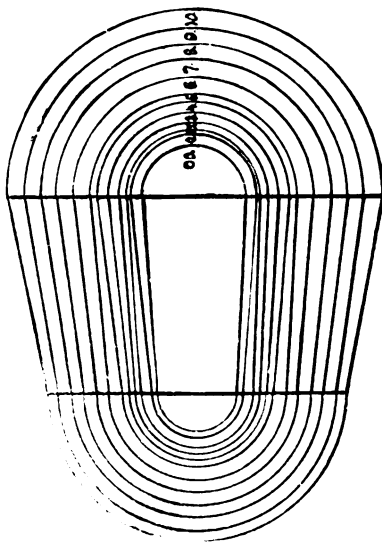
—8008. Rubber Cloth, unvulcanized, to make large cork stoppers air-tight, for sampling cl th, etc., ounce. .... 20 cts, Pound ..... \$2 50

8009. Rubber Sheetting, vulcanized, white,  
per yard ..... .80

Rubber and Plate for crushing ore (see  
Plate and Rubber).

Rubber Bags, for gas, (see Gas Bags).

\* 8010. RUBBER STOPPERS, solid, with one and two holes, of best and softest rubber, which will not become hard by age. These stoppers are unsurpassed in quality in resisting the influence of chemicals. Each stopper of this quality bears our mark E. & A. All sizes constantly on hand. They are sold by weight, per pound, \$2.00, by small quantities at fifteen cents per ounce. Stoppers of red (antimony) rubber, pound, \$2.75.



8010

Number,	00	0	1	2	3	4	5	6
Measure on top,	1.4	1.7	1.8	2.0	2.3	2.5	2.7	3.2 centi.
Measure on bottom,	1.0	1.2	1.5	1.65	1.8	2.0	2.3	2.6 "
Number,	7	8	9	10	11	11½	12	13
Measure on top,	3.7	4.1	4.5	5.0	5.6	6.4	6.5	7.0 centi.
Measure on bottom,	3.0	3.3	3.7	4.2	5.0	5.2	5.9	6.0 "

Rubber Stoppers, number to pound of 2 holes.

Number,	00	0	1	2	3	4	5	6
Number to pound of two holes,	132	85	60	50	40	32	27	20
Approximate price per dozen,	.25	.39	.52	.60	.78	\$1.00	1.23	1.65

Number,	7	8	9	10	11	11½	12	13
Number to pound of two holes,	14	12	9	7	6	5x	4½	4
Approximate price per dozen,	2.35	2.75	3.65	4.72	5.50	5.75	6.75	7.25

Larger sizes made to order at lowest rates.

8011. Cheaper grades for commercial purposes, so-called composition stoppers, made to order in quantities of not less than 20 pounds, per lb. .... \$1 00

8012. Rubber Tubing, of best quality, wrapped in cloth which will prevent its splitting, and makes it air-tight. This tubing is of extra quality being made especially for laboratory use and not the quality usually found in the trade.

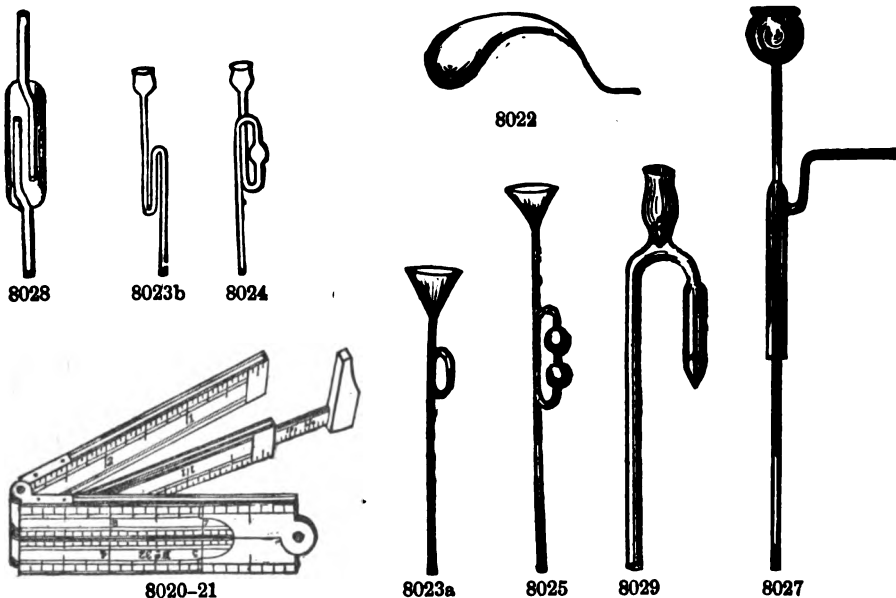
Light wall usual thickness,

Inside diameter.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1
Per foot,	.5	.7	.10	.15	.20	.26	.30

8013. Ditto, ditto, ditto, of double thickness used in general for gas or passing liquids through, very flexible.

Inside diameter,	$\frac{1}{8}$	3-16	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2 in.
	6	.9	.13	.20	.25	.30	.45	.55	.80
									\$1 35

8014. Rubber Tubing, still heavier, as the above, so-called pressure tubing, as used for **Bunsen's and Geissler's pumps.**  
 Inside diameter,  $\frac{1}{8}$  in., per ft., 12 cts. ; 3-16 in., per ft., 16 cts. ;  $\frac{1}{4}$  in., per ft., 30 cts. ;  $\frac{3}{8}$  in., per ft., 48 cts. ;  $\frac{1}{2}$  in., per ft., 70 cts. ; pound .....\$1 70
- 8015. Ditto, ditto, **black, of pure unvulcanized gum**, seamless, which will not tear.  
 Light. Inside diameter  $\frac{1}{8}$   $\frac{1}{4}$   $\frac{3}{8}$   $\frac{1}{2}$   $\frac{5}{8}$   $\frac{3}{4}$   $\frac{7}{8}$  1 in.  
 \$0.05 .07 .10 .12 .14 .17 .26 .35 .50 per foot
- 8016. Ditto, Heavy, .07 .08 .11 .15 .18 .22 .35 .45 .70 .85 “
- 8017. Red or Antimony Tubing, 10% higher in price.
8018. Rubber Tubing, pure Gum, thin wall for Gooch Crucibles.  
 1 inch.  $1\frac{1}{2}$  inch.  $1\frac{3}{4}$  inch.  
 .15 .20 .25 cts. per foot.
- Rubber Bulbs, for Pipettes or Dropping Glasses, (see Bulba.)
8019. Rubber Tissue, per oz. .... 25 cts.



- \* 8020. Rules, folding, boxwood, brass mountings, in inches and centimeters, caliper extension ..... 40 cts.
- \* 8021. Ditto, ditto, ivory, German silver mountings ..... \$2 50
- 8021a. Ditto, ditto, boxwood, 4 ft. .... 60 cts.
- 8021b. Ditto, boxwood, 1 meter and inches, one piece ..... 50 cts.
- 8021c. Rules, 1 meter long, in one piece, in inches and centimeters.  
 Extra fine quality. .... 1 00
- \* 8022. **Ruperts Drops**, per doz. .... 30 cts.
- \* 8023. **Safety Tubes**, plain, bent, a and b, conical or thistle top ..... 20 cts.
- \* 8024. Ditto, ditto, bent, with one bulb. .... 25 cts.
- \* 8025. Ditto, ditto, bent, with two bulbs. .... 30 cts.
8026. Ditto, ditto, bent, with three bulbs. .... 35 cts.
- \* 8027. Ditto, ditto, Vogel's ..... 40 cts.
- \* 8028. Ditto, ditto, according to Babo. .... 75 cts.
- \* 8029. Ditto, ditto, with two valves, small. .... 50 cts.
- Large ..... \$1 00
8030. **Safety Lamp**. Davy's, or Miner's Lamp. .... 3 50
8031. **Salimeter**, for Salt solutions, Brine, etc., per cent. scale. .... 50 cts.
- Saccharometers**, (see Hydrometers and Polariscopes.)
- Saddle Scales**, (see Scales with saddle weight.)

**8032. Sample Dishes, of Russian iron, flat.**

2	2½	3	4 in.
.10	.10	.10	.15 cts.

**8033. Sampling Pans, for ore, deep, seamless tin.**

5	6	7	8½	10 inch.
.10	.12	.15	.20	.25 cts.

\* **8034. Sampler, of tin, to get fair samples of ores, each.....** 56 cts.

**8035. Ditto, ditto, large.....** 75 cts.

\* **8036. Sample Shovel, for larger establishments where much sampling is done, yields fairer samples in one-quarter less time than by the old way, each complete with handle. Small.....** \$8 00 **Large.....** 10 00

**8037. Sand Baths, of Russian sheet iron, shallow form.**

Diameter,	2	2½	3	4	5	6	8	10 inches.
	.10	.10	.10	.15	.20	.20	.30	.40 cts. each.

\* **8038. Ditto, ditto, of iron, deep form.**

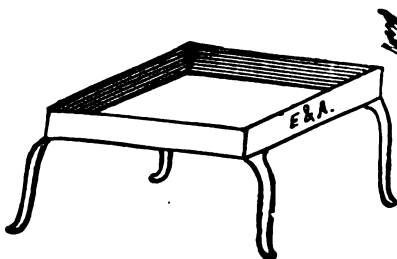
Diameter,	3	4	5	6	8	10 inches.
	.12	.15	.25	.30	.50	.60 cts. each.

**8039. Ditto, ditto, ditto, tinned iron, shallow.**

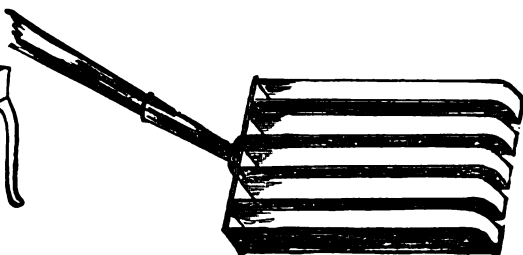
Diameter,	3	3½	4½	5	6½ inches.
	.3	.4	.5	.6	.10 cts. each.

**8040. Ditto, ditto, of cast iron, 9x9 in.....** \$1 00

**8041. Ditto, ditto, on 4 movable legs.....** 1 25



8041



8036



8038



8034



8044



8046



8047

\* **8042. Ditto, of sheet iron, with double bottom, aboht 9x15 in.....** \$3 00

**8043. Sand Paper, for cleaning wood parts, etc., in sheets.....** 5 cts.

\* **8044. Sand Glasses, in wooden support.**

For	1	2	3	5	10	30	45	60 minutes.
Price,	.40	.45	.45	.60	.75	\$1 00	1 10	1 20 each.

**Saws, for metal or wood, at market prices, in ordering mention size and style.**

**8045. Ditto, for cutting charcoal.....** 30 cts.

**Sample Tubes, (see Specimen Tubes.)**

\* **8046. Scales, hand, brass pans, English make, with weights in metal box, complete.**

Price..... 85 cts.

**Other Scales, (see Balances.)**

\* **8047. Scales, American, with separate tin scoop, tare and weights included.**

	4 pounds,	8 pounds.
	\$2 00	\$3 00



○\* 8063. Scorifiers, of the Battersea Works, London.

Inches, diam.,	1	1½	1½	2	2½	2½	3	3½	4	5
Diam., milli.,	.026	.032	.038	.051	.057	.064	.070	.077	.089	.127
Price per 100,	\$1 15	1 15	1 15	1 16	1 17	1 30	1 60	2 00	2 40	3 30

Scorification Moulds, (see Moulds.)

\* 8064. Scorifier Steel Spring Tong, light weight, each.....\$1 00

\* 8065. Ditto, ditto, Judson's, arranged to lift out Scorifiers from the rear without disturbing those in front.....\$2 00

8066. Scraper, of steel, to clean Muffles from slags,  
etc. Small..... 40 cts. Large..... 50 cts.

Screens, (see Sieves and Wire Gauze.)

8067. Sea Sand, for cleaning platinum vessels,  
lb ..... 10 cts.

8068. Sefstroem's Blast Smelting Furnace,  
used with charcoal or anthracite coal, by ap-  
plying a steady artificial blast, produces a  
very high heat, iron with fire clay lining.

Dia., exterior,	12	16	19	23 inch.
Dia., interior,	5½	6½	8	9½ inch.
Height,	10	12½	15½	19 inch.
Price,	\$10 00	15 00	18 00	20 00 each
With dome,	15 00	20 00	23 00	25 00 each

\* 8069. Seidlitz Powder Cups.....75 cts.

Separatory Apparatus, (see also Displace-  
ment Apparatus).

\* 8070. Ditto, ditto, Dr. E. Drexel's construction, with  
separatory funnel with two stopcocks, etc.,  
and with reservoir.

Capacity, 8 16 32 oz.

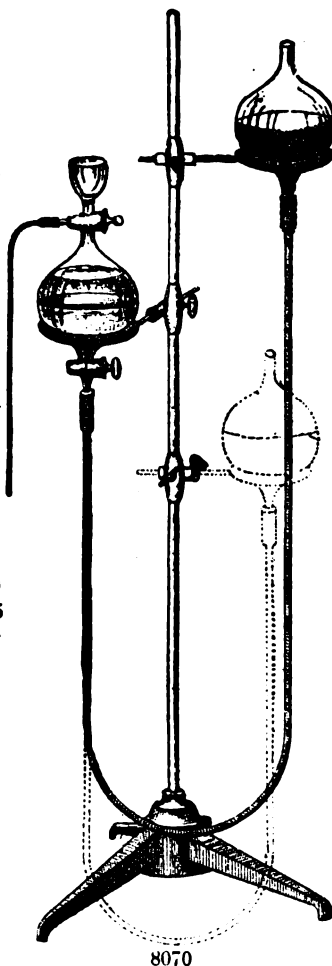
Price, without support, \$5 50 6 50 7 50

Support for the same.....\$3 50

\* 8071. Separatory Bottles. 1 pint, \$1 40 1 qt., \$1 75

Separatory Funnels, (see Funnels.) Sets for  
Volumetric Analysis, (see Appendix).

Sets for Qualitative Chemistry, (see Appendix).



8064



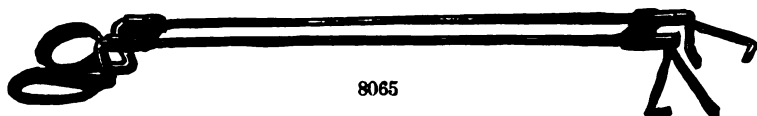
8071



8063



8069



8065

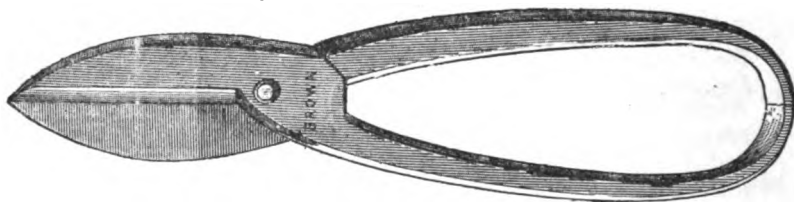
8072. Shades, of glass, round, to cover specimens, microscopes, etc., see also Bell-  
glasses. All sizes from No. 1.....height, 5 in. width, 4½ in.....30 cts.  
to No. 15..... " 20 in. " 13 in.....\$4 00

	Height.	Length.	Width.
8073. Ditto, ditto, oval, from No. 1.....9½	7½	3½ in.....	90 cts.
to No. 12.....23	16½	8 in.....	\$6 85

	Height.	Length.	Width.
8074. Ditto, ditto, square, from No. 1...9½	6½	4 in.....	\$ 95
to No. 12...22½	14	9½ in.....	5 84

* 8075. Shears, Brown's, steel, bright polish,	6 inch.	7 inch.	8 inch.	10 inch.	
	\$1 00	1 20	1 40	1 60	
—* 8076. Ditto, steel, (hand shears.)	10	12½	14	16 inch.	
	\$1 50	2 00	2 25	2 50	
* 8077. Ditto, for cutting filter paper.		10	12	15 inch.	
		\$1 30	1 75	2 50	
—* 8078. Sieves, brass cloth, wood rim, substantially made.					
Mesh.	5	6	8	10	12 inch.
No. 20,	.30	.35	.55	.70	.90 each.
No. 40,	.35	.40	.60	.80	1 10 "
No. 60,	.40	.45	.65	.90	1 20 "
No. 80,	.45	.55	.80	1 20	1 80 "
No. 100,	.60	.70	.90	1 40	2 20 "

8078a. Extra wood frames furnished to put paper in for covering Evaporating Dishes, etc., in the laboratory, 20 cts. to \$1 00.



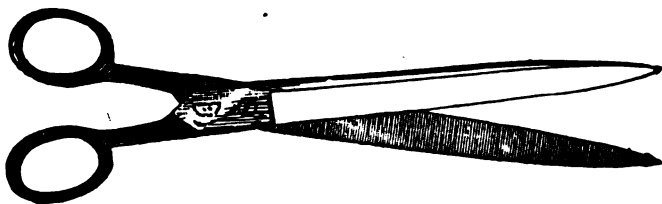
8075



8076



8078



8077

—8079. Sieves, brass gauze, metal frame.					
No.	20	40	60	80	100 mesh.
Diameter 5 in.	.60	.70	.85	1 00	1 25
" 8 in.	.90	1 00	1 15	1 50	2 00
8080. Ditto, with metal cover and bottom.	5 inch extra				50 cts.
	8 inch extra				75 cts.
—8081. Ditto, set of five, 5 in., with one cover and bottom					\$4 75
—8082. Ditto, set of five, 5 in., with one cover and bottom					7 00
—8083. Sieves, iron gauze, wood frame.					
Diameter,	12	15	18	20 inch.	
No. 18,	.40	.65	.75	.85	
No. 14,	.40	.62	.70	.80	
No. 10,	.40	.60	.68	.78	
No. 6,	.40	.55	.65	.75	

Sieves made to order, of any size, mesh or shape.

—8084. Sifting Machines								\$20
Outside measure, 25 inches long, 17 inches wide, 19 inches high.								
—8085. Sieves for fame, inside measure, 13½×18½×4½ inches, square.								
	100	80	60	40	20	16	10	8 mesh.
	\$4 15	3 75	3 35	3 25	3 00	2 75	2 75	2 75



8086. Skins, kid and chamois, selected, for cleaning and capping; all sizes, from 30 to 70 cents. Also buck skins for straining amalgam, etc.

Slides, of glass, for microscopes, (see Microscopes.)

○\* 8087. Soldering Coppers, Family, set.....50 cts.

8088a. Soldering Iron, larger sizes, per pound, 45 cents.....50 cts. to \$2 00

○\* 8088a. Soldering Iron Heaters, for gas.....\$1 25

—\* 8089. Spatula Bone, superior quality. 6 inch, 7 inch, long.  
Price, .15 .20 cts.

○\* 8090. Spatulas, of glass, for mixing, etc., 6 inches, each.....10 cts.

8091. Ditto, ditto, for weighings, ground on two sides to be used as scoop.....25 cts.

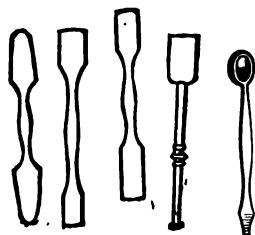
—\* 8092. Ditto, of horn, superior quality, (see figure 8089.)

Length,	4	5	6	7	8	9	10	12 inches.
	.8	.10	.12	.15	.20	.25	.35	.50 cts.

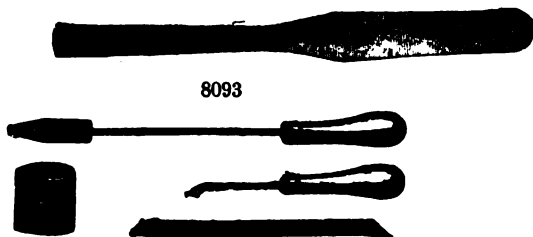
Ditto, with spoon end, (see Spoons.)

\* 8093. Ditto, steel, for mixing, etc., with wooden riveted handles, palette knives.

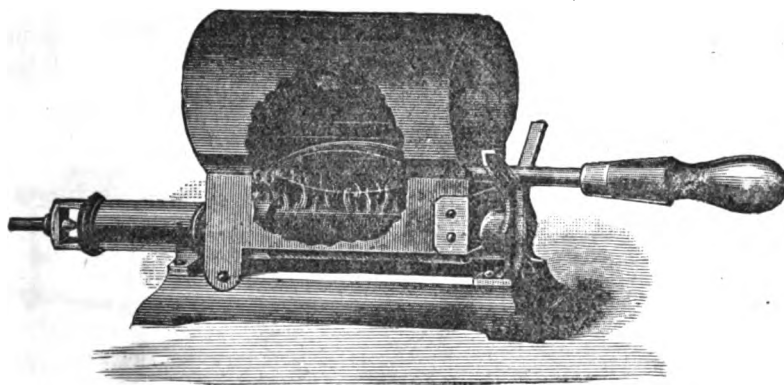
Length of plate,	3	4	5	6	7	8	9	10	12 inch.
	.20	.25	.30	.35	.45	.50	.65	.95	\$1 25



8089 8099a 8094 8090 8098



8087



8088a



8098b

\* 8094. Ditto, steel throughout, for mixing, etc., spatula on both ends.

Length,	5½	6½	7½	9	10	11	12	14	16	20 inch.
	.20	.22	.25	.30	.35	.40	.45	.50	.60	\$1 00

— 8095. Ditto, of Platinum, with glass or wooden handle.....from \$1 50 to 4 00

— 8096. Ditto, of platinum, length, 4 inches, all plate, according to weight. See also platinum.

— 8097. Ditto, ditto, folding like a knife, according to size and weight..from \$7 00 to 12 00

\*\* 8098. Ditto of porcelain, with handle, spoon end or double spatula.

Length.	6 in.	7 in.	8½ in.	11 in.	12½ in.	14 in.	15	17 in.
	.25	.35	.40	.60	.65	.75	.85	1.15

\*a \*b 8099. Bitton, porcelain, Royal Meissen, spatula on both ends.

Length.	9 in.	12 in.
	.45	.65

Specific Gravity Balances, system Mohr, Westphal & Jolly, (see Balances.)

Specific Gravity Bottles, see Bottles for Specific Gravity. Specimen Bottles, small, glass

stoppered, see Bottles. Specimen Bottles, for cork or rubber stoppers.

8099a. Spatulas, of nickel	6	7	8½ inches.
double end,	.30	.50	.80

\* 8100. Specimen Tubes, round bottom, of good heavy glass. Corks to fit will be charged extra.

Dimensions, 2x $\frac{1}{2}$ in.	3x $\frac{1}{2}$ in.	4x $\frac{1}{2}$ in.	5x $\frac{1}{2}$ in.	6x $\frac{1}{2}$ in.	2x $\frac{1}{2}$ in.
Per dozen, .20	.25	.30	.35	.45	.25
Dimensions, 3x $\frac{1}{2}$ in.	4x $\frac{1}{2}$ in.	5x $\frac{1}{2}$ in.	6x $\frac{1}{2}$ in.	8x1 in.	
Per dozen, .30	.35	.40	.50	.75 cts	

8101. Ditto, ditto, flat bottom, same sizes as above but 25% higher in price.

Any other size made to order at shortest notice.

Specimen Jars, see Anatomical Jars.

## SPECTROSCOPES.

GERMAN MAKE.

—\* 8102. Spectroscope, direct vision, for carrying in the pocket, with adjustable slit

\$14 00

— 8103. Ditto, with comparison prism

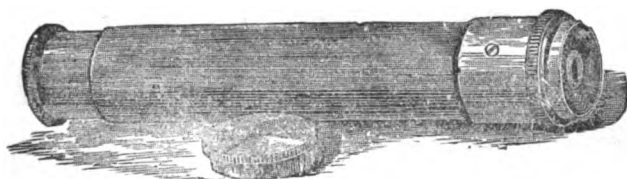
20 00

8104. Ditto, extra large, with comparison prism

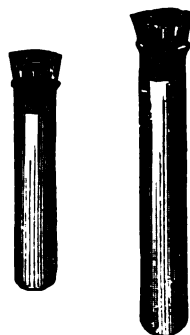
30 00

8104a. Adjustable stand for above

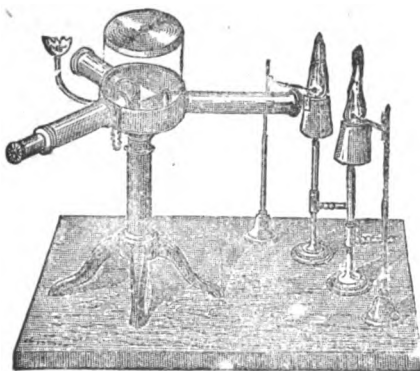
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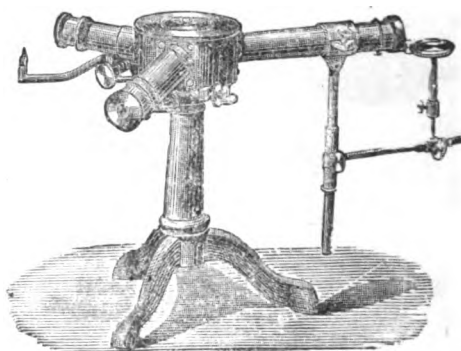
8102



8100



8106



8107

— 8105. Ditto, according to Kirchhoff and Bunsen, with telescope for the millimeter scale and with illuminating lamp for the same, with adjustable slit, Bunsen's lamp, 12 platinum wires with glass supports and stand for the same, 2 spectroscopic charts and 5 printed millimeter scales

\$52 00

—\* 8106. Ditto, ditto, same, but with a small prism for comparison, attached to the slit and with 2 Bunsen's lamps

\$60 50

—\* 8107. Spectroscope, Kirchhoff and Bunsen's grand model, with 1 flint glass prism of 60°, 2 telescopes with 27 m.m. object glass and 24 c.m. focus, with micrometer slit and 6 times power, telescope for the scale 14 m.m. object glass, Shellen's universal support, complete with lamps, etc.

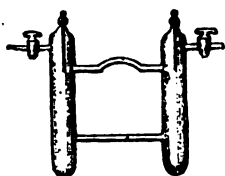
\$93 00

- 8108. Spectroscope, Kirchhoff and Bunsen's, with 1 prism of 60° and 3 prisms of 45° made of the heaviest flint glass, placed on a large iron circular plate of 27 inch diameter, supported by a heavy stand on triangular base. The telescopes have objectives of 1½ inch diameter and 17 inch focus with 2 eye pieces of 36 and 72 times power, besides these are 1 telescope for the scale and 1 extra telescope for the observation of the image of the scale reflected from the mirror, complete. Price.....\$495 00

Spectroscope Burners, see Burners.

- Spectroscopes, Browning's make, student's, one prism, with cabinet..... 65 00  
 — 8110. Ditto, model, two prisms, with cabinet..... 150 00  
 — 8111. Ditto, large table, spectroscope (Gasseot)..... 390 00  
 8112. Spectroscopic Cells, to observe the absorption spectrums of liquids, with parallel sides, the whole of glass, can be taken apart, each..... 3 00  
 8113. Ditto, ditto, the same for volatile liquids, each..... 3 50  
 8114. Spectroscopic Charts, small, each..... 25 cts.  
 8115. Ditto, ditto, larger, in sets of 4, each chart...\$3 00 complete set..... 10 50  
 \* 8116. Spectral Tubes, new construction, for longitudinal observations of the electric spark..... 4 00  
 \* 8117. Ditto, ditto, electric, with 2 stop-cocks. empty, for filling as convenient.... 3 60

Spirit Levels, see Levels.



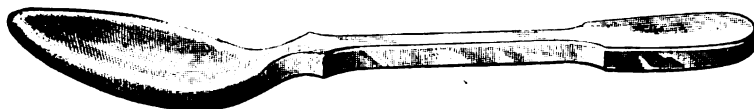
8116



8117



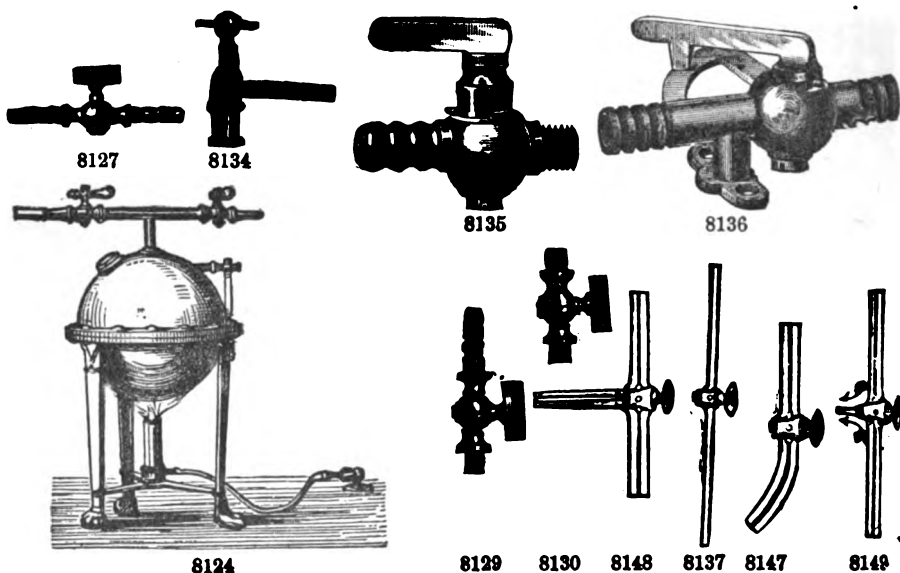
8118e



8118 h

8118. Spoons, for blow-pipe work, ivory ..... 25 cts.  
 8118a. Ditto, ditto, of platinum, according to size, (see Platinum).....\$1 00 to 4 00  
 — 8118b. Ditto, ditto, of bone, superior quality, price, 5 in. 6½ in. long. .15 .20 cts.  
 — 8118c. Ditto, ditto, very superior, with spatula end. 5 in. 6½ in. long. .15 .20 cts.  
 8118d. Ditto, iron, for deflagrations, cup ½ in. or 1 in., each..... 15 cts.  
 — \* 8118e. Spoons of clear, transparent horn.  
     4 in. 5 in. 6 in. 7 in. 8 in. 9 in. 10 in. 11 in. 12 in.  
     .8 .10 .12 .15 .20 .25 .35 .40 .50 cts.  
 — 8118f. Ditto, ditto, double, very superior, spoon on each end.  
     5 inch. 6 inch. 7 inch. 8 inch. 10½ inch.  
     .15 .20 .25 .35 .45 cts.  
 — 8118g. Ditto, ditto, very superior, with spatula end.  
     5 inch. 6 inch. 7 inch. 8 inch. 10½ inch.  
     .12 .15 .20 .25 .40 cts.  
 — \* 8118h. Ditto, of heavy cut glass, for stirring and taking samples.  
     Size of tea-spoon .....26 cts. Dessert.....30 cts. Table.....45 cts.  
 8118i. Ditto, of Bohemian glass, dipper shape, for transferring gasometer tubes.  
     Diameter of cup, 1½ inch. 2 inch. 2½ inch.  
     .20 .25 .30 cts.  
 8118k. Ditto, for Sodium, each .....40 cts.  
 8118l. Ditto, of nickel, double-ended 5 6 7 8½ inches.  
     .45 .60 .65 .90  
 8118m. Ditto, " spatula end, .45 .60 .80 1 00

- 8118n. Sponges, sheep-wool, for cleaning tables, etc., per lb. .... \$3 00  
 ○ 8119. Ditto, of platinum, 25 cts., per dozen ..... 2 75  
     **Stand, different, (see Supports.)**  
 — 8120. Standard candles for photometrical tests, per pound, (1 dozen) ..... 2 50  
 — 8121. **Steam Boiler.** of copper, vertical or horizontal, with water gauge, safety valve inlet, outlet and support, for furnishing steam for distillations, etc., etc.  
     Capacity,       $\frac{1}{2}$  gallon.      1 gallon.      2 gallon.      4 gallon.  
     Size,            4x8 in.      5x10 in.      7x14 in. tubular,  $8\frac{1}{2}$ x18 $\frac{1}{2}$  in.  
                      \$35 00      45 00      50 00      60 00  
 — 8122. Ditto, with pressure gauge ..... \$5 00 to 7 00 additional  
 8123. Ditto, ditto, with coil for superheating the generated steam, \$6 00 to 10 00 additional  
 — \* 8124. Ditto, ditto, globe shape, of heavy copper, with pressure gauge, etc., for heating jackets, etc. Steam is generated by gas or alcohol.  $2\frac{1}{2}$  gallon capacity ... \$50 00  
     **Stills, of copper, for distilling water and spirits, see Apparatus for distilling and Hofmann's Apparatus.**  
 8125. **Stirrers,** of German glass, one end round, the other pointed. per lb. .... 60 cts.  
 8126. Ditto, of French clay.      6 inch.      8 inch.      12 inch.      16 inch.  
    .10      .15      .20      .25 cts.



## STOP-COCKS.

- \* 8127. **Stop-cocks,** brass, well-finished, air-tight, male, double ends for tubing connections, bore  $\frac{1}{8}$  inch, each ..... 70 cts.  
 8128. Ditto, bore  $\frac{1}{8}$  inch ..... 90 cts.  
 \* 8129. Ditto, ditto, one end for tubing the other with screw ..... 65 cts.  
 8129a. Ditto, ditto, bore  $\frac{1}{8}$  inch ..... 90 cts.  
 \* 8130. Ditto, ditto, double male screw ..... 75 cts.  
 8131. Ditto, ditto, bore  $\frac{1}{8}$  inch ..... \$1 00  
 8132. Ditto, ditto, male and female screw ..... 75 cts.  
 8133. Ditto, ditto, double female screw ..... 75 cts.  
 \* 8134. Ditto, ditto, with universal movement, (connectors), each ..... \$1 00  
 \* 8135. Stopcocks, brass, of new and improved pattern, plug with full bore of tube  
     a,  $\frac{1}{8}$  in. bore ..... 80 cts.      b,  $\frac{1}{2}$  in. bore ..... \$1 00  
 \* 8136. Ditto, ditto, with quadrant and pointer to regulate exact quantities of gas supplied  
     c,  $\frac{1}{8}$  in. bore ..... 95 cts.      d,  $\frac{1}{2}$  in. bore ..... \$1 10

\* 8137. Stopcocks, glass, Geissler's, the best made, perfectly air-tight, small, bore 1 milli. Price.....(See cut on page 208).....80 cts.

8138. Ditto, ditto, of glass, perfectly air-tight, medium, bore 2 milli. 90 cts.

8139. Ditto, ditto, ditto, large, bore 3 milli.....\$1 20

8140. Ditto, ditto, extra large, clear bore, in stopper.

4 milli.	5 milli.	6 milli.	8 milli.	10 milli.
\$1 60	2 40	3 00	4 00	6 00

Larger sizes to order.

**Stopcocks of new designs. Patent applied for. Plug bored in an angle, to prevent leakage and make the same absolutely air-tight.**

\* 8141. Connection stop-cock, small..1 mm. bore..\$1 00 Large..3 mm. bore..\$1 60

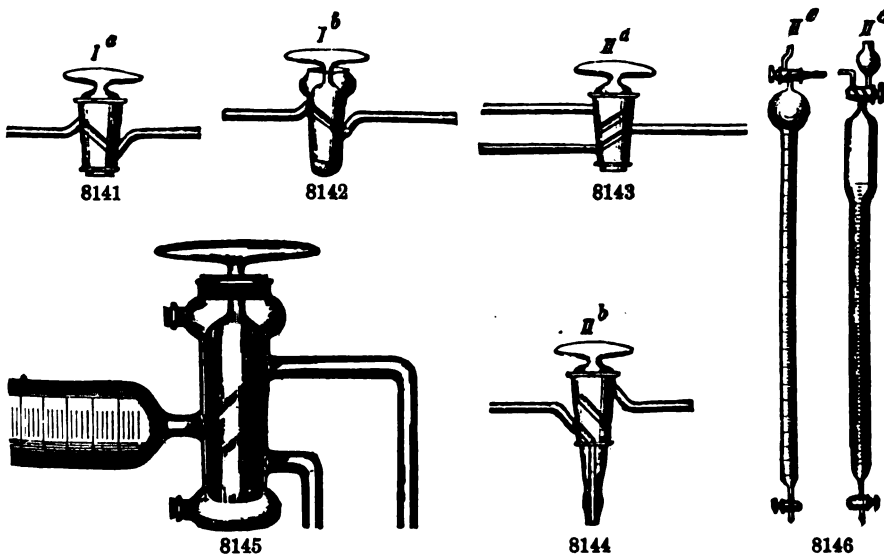
\* 8142. Ditto, ditto, with mercury seal, small. 1 mm. bore. 2 20 Large..3 mm. bore. 2 80

\* 8143. Three-way stop-cocks, small. 2 mm. bore.1 60 Large..4 mm. bore. 2 40

\* 8144. Ditto, ditto, downward, small..... 2 mm. bore 1 60 Large..4 mm. bore. 2 25

\* 8145. Ditto, ditto, horizontal, with mercury seal, small....2 mm. bore....\$3 30

Extra sizes to order. Large....3 mm. bore.... 4 00



\* 8146. These stop-cocks will be used if so wished on any form of gas burette, etc., made to order.

\* 8147. Ditto, of glass, very heavy, so-called factory made. See cut on page 208.

Bore,	3,	5,	8,	10 milli.
Price,	\$1.00,	1.50,	1.75,	2.50.

\* 8148. Ditto, glass, Geissler's, three way.....(See cut on page 208)..... \$1 75

\* 8149. Ditto, ditto, ditto, three way, new style.....(See cut on page 208).... 1 75

8150. Ditto, ditto, like 8149, for permanent rubber tube connection end piece not turning with the plug for gas apparatus..... \$1 75

Ditto, extra large for Geissler's pump, etc., etc., to order at reasonable rates.

\* 8151. Stopcocks, of glass, four way. 2 mm. bore, 4 mm. bore.  
\$1 60 \$2 20

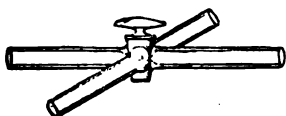
8151a. Stopcock 3-way with funnel top for Gas apparatus ..... \$2 00

○\* 8152. Stopcocks, of best German acid proof stoneware.

Number,	1,	2,	3,	4,	5,	6	
Bore,	10,	15,	20,	25,	30,	40	millimeters.
"	$\frac{3}{8}$ ,	$\frac{1}{2}$ ,	$\frac{3}{4}$ ,	1,	1 3-10,	1 $\frac{1}{2}$	inch.
Price,	1.40,	1.60,	1.85,	2.30,	2.80,	3.60	each.

○\* 8153. Stopcocks, ditto, ditto.

Number,	1,	2,	3,	4,	5,	6,	7,	8,	9
Bore,	10,	15,	20,	25,	30,	40,	50,	65,	80 millimeters.
"	$\frac{3}{8}$ ,	$\frac{1}{2}$ ,	$\frac{3}{4}$ ,	1,	1 3-16,	1 $\frac{1}{2}$ ,	2,	2 $\frac{1}{2}$ ,	2 $\frac{1}{2}$ inches.
Price,	1.40,	1.60,	1.85,	2.30,	2.80,	3.60,	4.65,	6.20,	7.75 each..



8151



8152



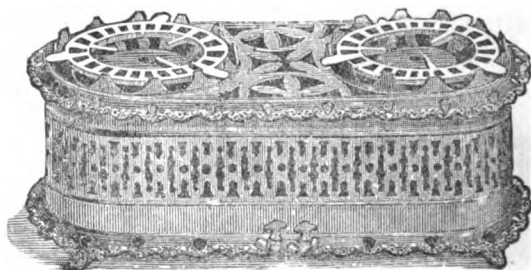
8154



8153



8155



8156

○\* 8154. Stopcocks, ditto, ditto.

Number.,	2a,	3a,	4a,	5a,	6a,	7a,	8a,	9a.
Bore,	15,	20,	25,	35,	40,	50,	65,	80 millimeters.
"	$\frac{3}{8}$ ,	$\frac{1}{2}$ ,	1,	1 3-16,	1 $\frac{1}{2}$ ,	2,	2 $\frac{1}{2}$ ,	3 $\frac{1}{2}$ inches.
Price,	1.60,	1.85,	2.30,	2.80,	3.60,	4.65,	6.20,	7.75 each.

For Three-way Stopcocks according to description, 75 per cent. additional.

For grinding Stopcocks into outlets of vessels, 50 cents each.

## STOVES.

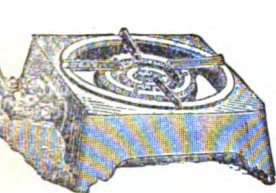
\* 8155. Stoves, for gas, round flame, best style, measure across the top.

No.	0.	1,	2,	3,	4,
	4	5	6	7	8 inches.
	.60	.75	\$1.00	1.20	1.60.

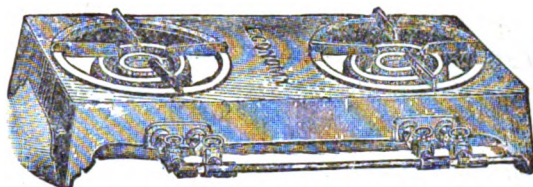
—\* 8156. Ditto, ditto, ditto, with double burner.....\$4 00 With stopcock \$4 50

8156a. Ditto, nickel plated ..... 5 50

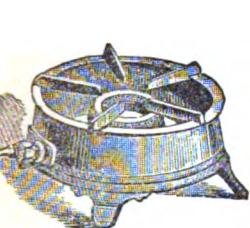
- \* 8157. **Stoves, for gas, the new low shaped Economy stove, Morton's patent, giving perfect satisfaction,  $4\frac{1}{2}$  inches high, 9 inches square on top.** ..... \$4 25
- \* 8158. Ditto, ditto, double stove. .... 8 50
- \* 8159. Ditto, ditto, round, 4 inches high,  $8\frac{1}{2}$  inches diameter on top. .... 2 50
- \* 8160. Ditto, ditto, ditto, with wooden handle. .... 2 75
8161. **Gas Stoves, with complete set concentric rings. The most perfect laboratory gas stove, expressly for heating retorts and dishes safely without using a sand bath, as the flame will not touch the bottom of the vessel, high or low shape.**
- |        |                |       |       |        |        |
|--------|----------------|-------|-------|--------|--------|
|        | Diameter       | 6 in. | 8 in. | 10 in. | 12 in. |
| 8161a. | low shape,     |       |       |        |        |
| 8161b. | or high shape, | 2 00  | 2 50  | 3 00   | 3 50   |



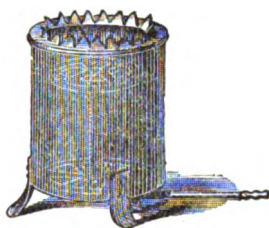
8157



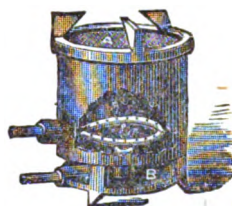
8158



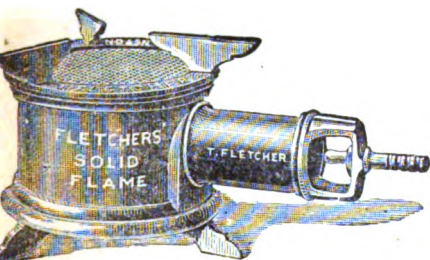
8159



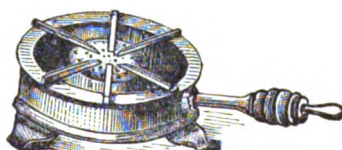
8161b



8163



8164



8160

- 8162. **Gas Stove with wire gauze protection for heating inflammable liquids in distillations, Ether, petroleum, etc.** Small .... 7 50. Large .... 10 00
- \* 8163. Ditto, Fletcher's, for low and higher temperatures. This burner gives a complete range of temperature, from a gentle current of warm air to a clear red heat. For very low temperatures the ring must be lighted through the opening B. With the blast arrangement ..... \$2 00 Without blast ..... \$1 75
- \* 8164. Ditto, ditto, solid flame. .... 2 00
- Extra gauze tops, each. .... 25

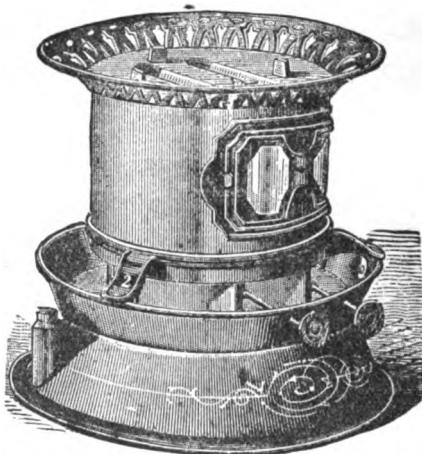
- \* 8165. Stove, "Primus Cooking Stove No. 1," to burn Kerosene, without wick, height  $8\frac{1}{2}$  in., diameter of top  $8\frac{1}{2}$  in. .... \$4 50
- 8165a. Stove, as above, without the standards, price. .... 4 00
- \* 8166. Stoves, so arranged that the kerosene is kept under water to prevent explosion.
- |                  |        |                |                         |
|------------------|--------|----------------|-------------------------|
| Diameter on top, | 5      | $7\frac{1}{2}$ | $10\frac{1}{2}$ inches. |
| Price,           | \$1 25 | 1 75           | 3 00                    |
- 8166a Stove, chemical American, with oven ..... \$5 25
- \* 8167. Strainers, of porcelain with or without handle.
- |           |                |                |                |                |                         |
|-----------|----------------|----------------|----------------|----------------|-------------------------|
| Diameter, | $4\frac{1}{2}$ | $5\frac{1}{2}$ | $6\frac{1}{2}$ | $8\frac{1}{2}$ | $10\frac{1}{2}$ inches. |
|           | .65            | .90            | 1 40           | 1 80           | 3 00                    |
8168. Ditto, of porcelain with flat, perforated bottom and straight sides.
- |           |        |      |                |                |                      |
|-----------|--------|------|----------------|----------------|----------------------|
| No.       | 1      | 2    | 3              | 4              | 5                    |
| Diameter, | 12     | 11   | $9\frac{1}{2}$ | $7\frac{1}{2}$ | $4\frac{1}{2}$ inch. |
| Price,    | \$2 00 | 1 75 | 1 25           | 1 00           | .70                  |
8169. Ditto, s. c. dipping baskets, body  $6\frac{1}{2}$  in. x 6 in., porcelain... \$2 50
- 8169a. Ditto, Stoneware, diameter 6 inches 75c. Large, 9 inches 1 00



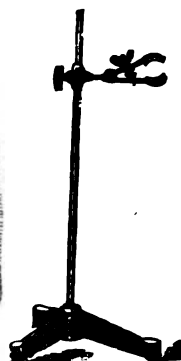
8167



8165



8166



8172

8170. Straw Rings, plaited.

Diameter inside,	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	5	6	7	$8\frac{1}{2}$	10	12 in.
Price,	.15	.18	.20	.22	.25	.28	.30	.35	.50	.70	\$1.00

\* 8171. Streak Plates, of porous porcelain, for mineralogists. Royal Berlin.

$1\frac{1}{2} \times 2\frac{1}{2}$ in.	$2\frac{1}{2} \times 3\frac{1}{2}$ in.	$3 \times 4$ in.	$3\frac{1}{2} \times 5\frac{1}{2}$ in.
.20	.25	.30	.40 cts.

See fig. 6953.

## SUPPORTS.

Of superior make, new styles and at considerably reduced rates. All our wood work is made of hard, well-seasoned wood.

\* 8172. Supports for burettes, of iron, with triangular base and iron clamp... 80 cts.

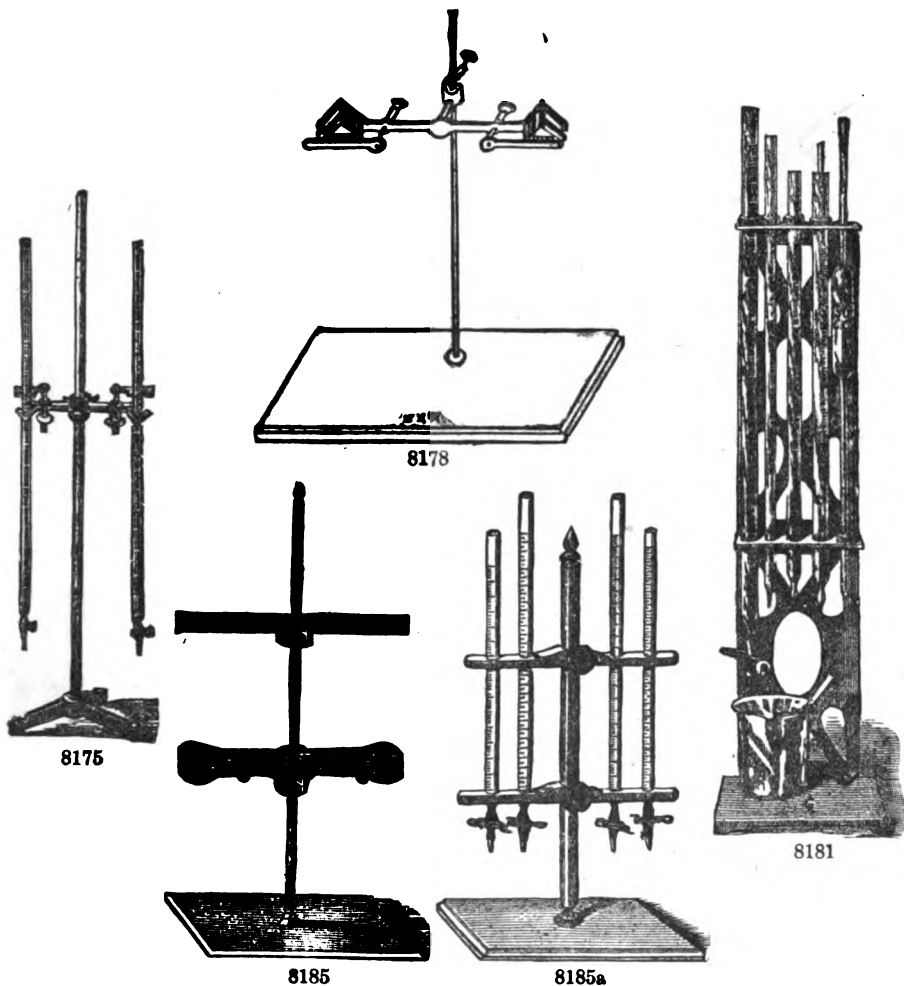
8173. Ditto, ditto, with two clamps ..... \$1 20

8174. Ditto, ditto, with three clamps ..... 1 60

If ordered with brass clamps, 20 cts. per clamp; if plated, 30 cts. additional.

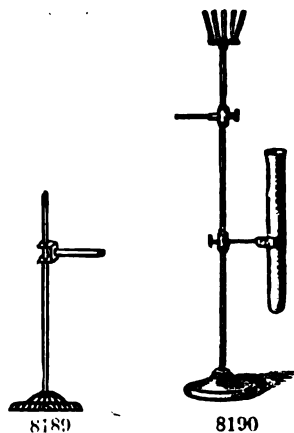
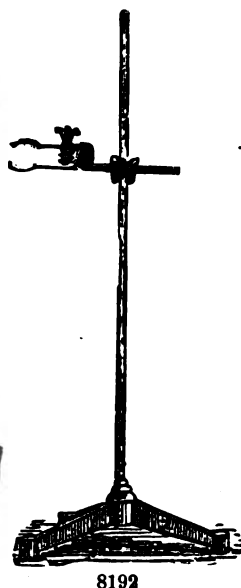
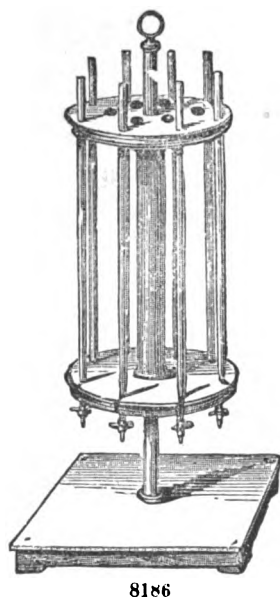
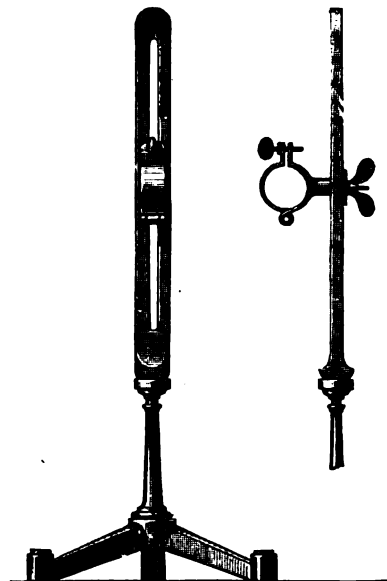
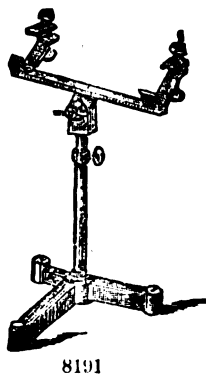
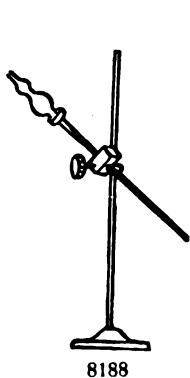


- |         |   |        |
|---------|---|--------|
| * 8175. | Supports, for burettes, iron, according to <b>Professor Hofmann</b> , two parallel clamps for two burettes, with stand..... | \$1 25 |
| 8176.   | Ditto, ditto, iron, according to <b>Professor Hofmann</b> , four parallel clamps, with stand. Price.....                    | \$2 00 |
|         | If ordered with white enameled iron base, additional \$1 75.  |        |
| 8177.   | Ditto, ditto, for one burette, metal clamp, with steel rod on wooden base....   | \$1 00 |
| * 8178. | Ditto, ditto, with one <b>Hoffmann's</b> clamp for 2 burettes.....  | 1 50   |
| 8179.   | Ditto, ditto, with two <b>Hoffman's</b> clamps for 4 burettes.....  | 2 40   |
|         | If ordered with white porcelain base, additional, \$1 50.   |        |



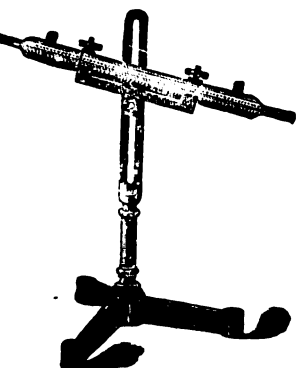
- |   |         |
|---|---------|
| 8180. Ditto, ditto, for burettes, Hofmann's, brass clamp, new form, for 3 burettes,                                       | \$4 00  |
| 8180a. Ditto, ditto, with 2 arms.....   | 3 50    |
| * 8181. Ditto, ditto, for burettes, of wood, to be put against the wall, for pinch-cock burettes and pipettes.....        | \$1 50  |
| 8182. Ditto, ditto, for burettes, of wood, same as used in Columbia College, one wooden cork-lined clamp for burette..... | 95 cts. |
| 8183. Ditto, ditto, with extra arm to keep burette steady.....  | \$1 25  |
| 8184. Ditto, ditto, double arm for two burettes.....  | 1 25    |
| * 8185. Ditto, ditto, with extra arm to keep burette steady.....  | 1 50    |
| * 8185a. Ditto, ditto, for burettes, of wood, for four Mohr's pinch-cock burettes, two wooden arms.....                   | \$1 35  |

- \* 8186. Supports, for burettes of wood, revolving for eight burettes and pipettes.... \$3 50  
 8187. Ditto, ditto, with white porcelain base, ..... 5 00  
 \* 8188. Ditto, ditto, of brass, with universal joint, nickel plated, very light to hold test tubes, matrasses, thermometers and platin wire, for spectrum analysis, etc. \$1 60  
 \* 8189. Ditto, ditto, Bunsen's, for flame reactions..... .80  
 \* 8190. Ditto, ditto, with pins for 6 or 8 test tubes..... 1 50

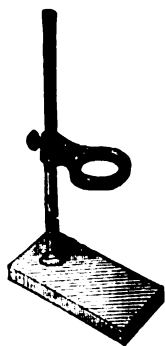


- \* 8191. Ditto, ditto, for condensers, of metal, according to Professor Bunsen, with universal movement..... \$2 50  
 8191a. Extra large..... 3 00  
 \* 8192. Ditto, ditto, for condensers, iron with Bunsen clamp..... 1 60  
 \* 8193. Ditto, ditto, with extra large double clamp, like figure 5965..... 1 85  
 8194. Ditto, ditto, with universal double jointed clamp, see clamp, a. s. z. of support 8228. .... 2 25  
 \* 8195. Ditto, ditto, for condensers, Hoffmann's. Small .....\$2 50 Large..... 3 50

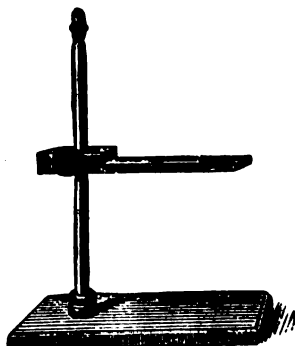
- \* 8196. Supports for condensers, Bunsen's modification..... \$3 50  
 \* 8197. Ditto, ditto, for condensers, of wood, according to Professor Liebig, with large wooden clamp..... 1 50  
 \* 8198. Ditto, ditto, wooden, with upright clamp..... 1 10  
 \* 8199. Ditto, ditto, for large metal condensers of oak wood, with universal movement. See figure 6027..... 6 00  
 \* 8200. Ditto, ditto, with 3 wood-lined iron rings, for three funnels, with square or triangular base..... \$1 25  
 \* 8201. Ditto, ditto, with 3 flanged rings to hold funnels in position..... 1 00



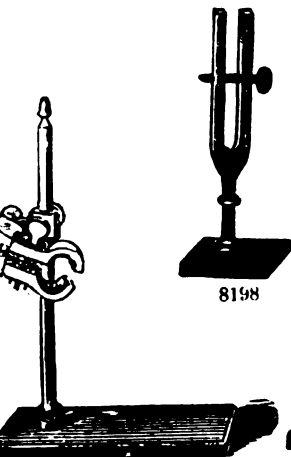
8196



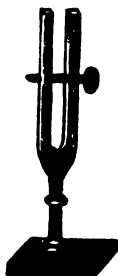
8205



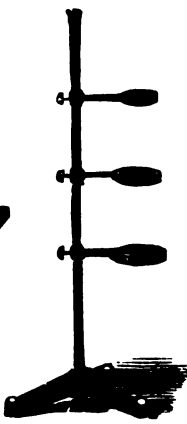
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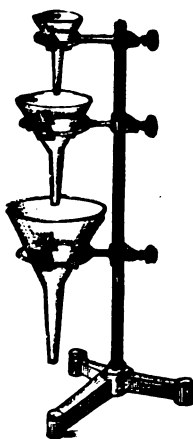
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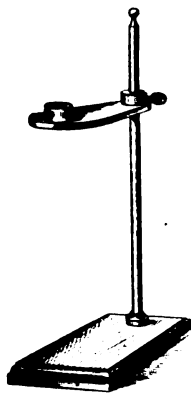
8198



8200



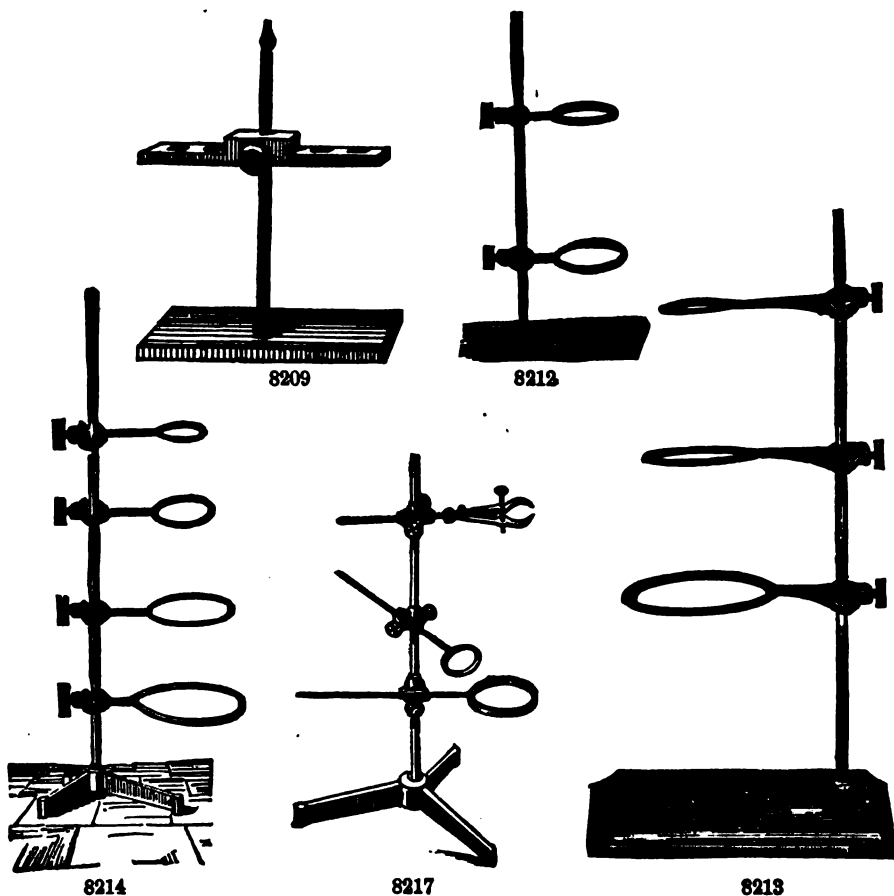
8202



8203

- \* 8202. Ditto, ditto, with three extra large rings..... 1 50  
 \* 8203. Ditto, ditto, wooden, for one funnel, according to Professor Fresenius same as used in Columbia College..... 90 cts.  
 8204. Ditto, ditto, double base, with two plates for two funnels..... \$1 40  
 \* 8205. Ditto, ditto, for one funnel, a large wooden ring..... 90 cts.  
 8206. Ditto, ditto, double base, with two rings, for two funnels..... \$1 40  
 \* 8207. Ditto, one arm, for two funnels..... 75 cts.  
 8208. Ditto, ditto, double base, with two arms, for four funnels..... \$1 10

- \* 8209. Supports, wooden, one double arm, for four funnels.....90 cts.  
 8210. Ditto, ditto, two double arms, for eight funnels.....\$1 30  
 8211. Ditto, ditto, for six funnels, as used in sugar houses, all six funnels in line between two uprights, height adjustable.....\$3 50  
 \* 8212. Supports, so-called Retort Stands, with two rings, rings provided with entirely improved screws which allow the rings to be taken out from the side and will fasten tight to any thick or thin rod, square or triangular base.....45 cts.  
 \* 8213. Ditto, ditto, larger, with three rings & square or triangular base. This is an entirely improved stand of superior make, and we claim it to be the best support made. Price.....65 cts.  
 No. 8213. With square base, is always given if an iron retort stand is ordered.

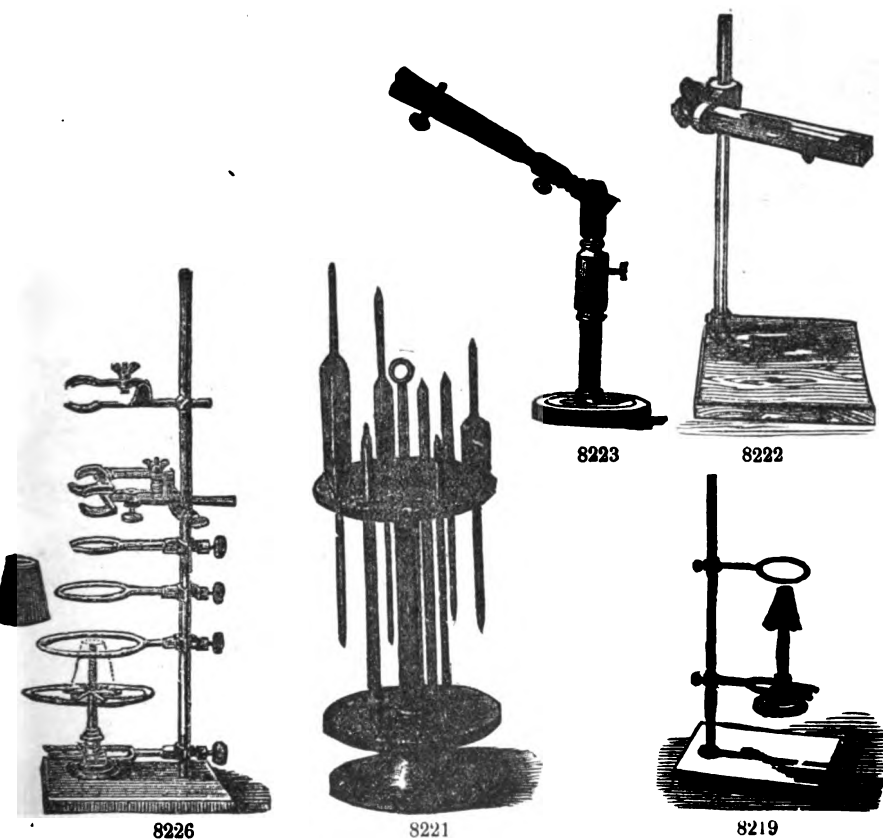


- \* 8214. Ditto, ditto, extra large, with four rings.....\$1 00

Above Supports are entirely superior to what is generally sold as retort stands and less in price than the commonest stand in the market.

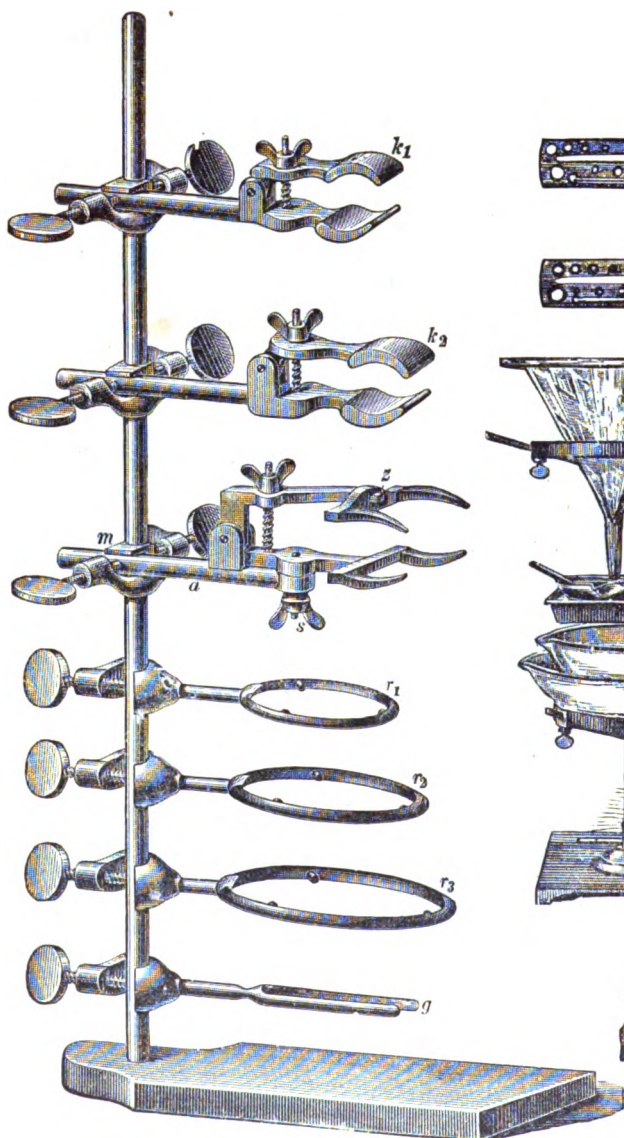
8215. Ditto, ditto, four rings, extra large, with heavy adjustable base.....\$1 25  
 8216. Ditto, ditto, with extra heavy triangular or square base and extra heavy rod, the heaviest support made. See figure 8228.....\$1 75  
 \* 8217. Ditto, ditto, iron, with extension rings, two rings.....90 cts.  
 Three rings.....\$1 25. Four rings.....1 50  
 Extension clamps for same, (see fig. 5963.) Clamps, plain.....75 cts.  
 Hofmann's. (See fig. 5962).....65 cts.

8218. Supports, iron, square, enameled base, fork for Bunsen's burner and one ring.  
Price .....\$1 75
- \* 8219. Ditto, ditto, with Bunsen's burner, star and chimney..... 2 50
8220. Ditto, ditto, wooden, for pipettes, (style like fig. 8235).....75 cts.
- \* 8221. Ditto, revolving for 12 pipettes, polished.....\$2 50
- \* 8222. Supports, universal, of wood, cork lined, according to Professor Gay Lussac, German form.....\$1 60

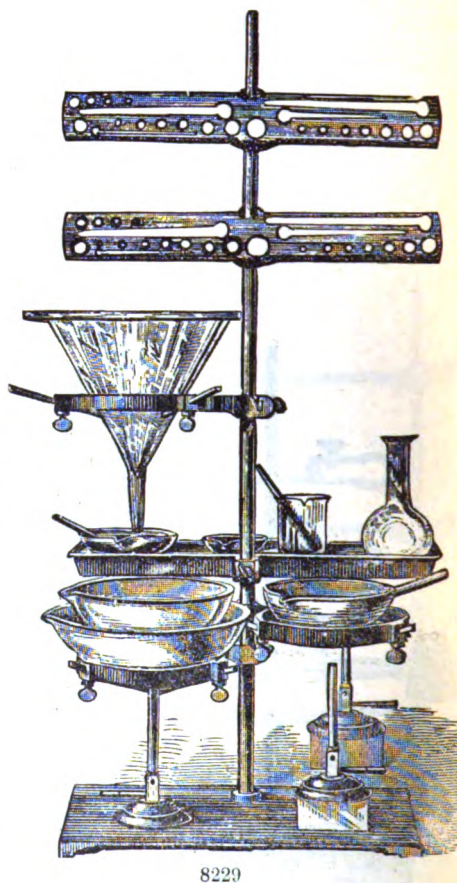


- \* 8223. Ditto, ditto, universal, of wood, cork lined, with heavy base, according to Professor Shellbach.....\$2 00
8224. Ditto, ditto, Griffin's form, combining the advantages of the above two, of polished wood .....\$3 00
8225. Double size, mahogany..... 4 00
- \* 8226. Ditto, ditto, universal, of iron, according to Prof. Bunsen, with 3 rings, fork for Bunsen's burner, Bunsen's burner with star and chimney, blow-pipe tube, porcelain plate and two large clamps for condensers, etc., complete.....\$5 00
8227. Ditto, ditto, but with three clamps and 4 rings..... 6 00

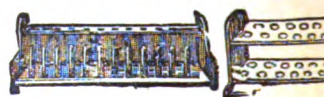
- \* 8228. Supports, with extra heavy base, extra heavy rod, four clamps and four rings, otherwise like above, the heaviest and most complete Bunsen's support made.....\$7 00
- \* 8229. Supports, universal, according to Dr. Squibb, with small and large sand baths, adjustable holders for dishes, funnels, pipettes, burettes, etc .....\$5 00



8228



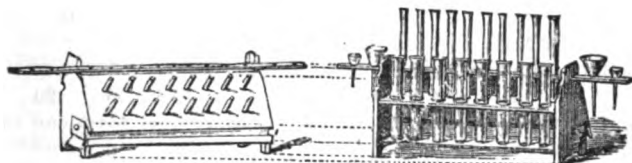
8229



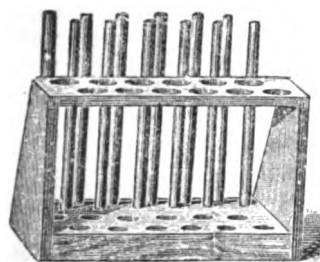
8231

8230. Supports, low form for 12 test tubes, all in one row.....30 c
- \* 8231. Ditto, ditto, low form, with 12 pins.....60 c
- \* 8232. Ditto, ditto, for 12 test tubes, low form, 12 holes in 2 rows.....30 c
8233. Ditto, ditto, with 6 pins.....50 c
8234. Ditto, ditto, for 12 tubes, heavy, the most substantial for student's use.....60 c

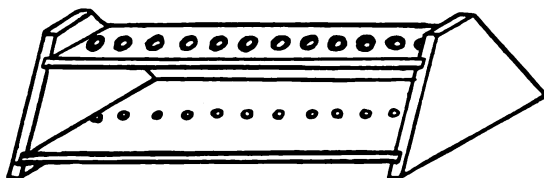
- \* 8235. Supports, for 13 test tubes, usual form, German style, each . . . . .40 cts.
- \* 8236. Ditto, ditto, for thirteen tubes, with drying points, each . . . . .60 cts.
- 8237. **Test Tube Supports**, (like figure 8235), with wooden back to prevent tubes from slipping out . . . . .75 cts.
- \* 8238. Ditto, ditto, Fresenius', larger, with pins and larger holes . . . . .\$1 00
- \* 8239. Ditto, ditto, extra large, for lecture table, taking 8 and 10 inch test tubes, plain. Price . . . . . \$1 25



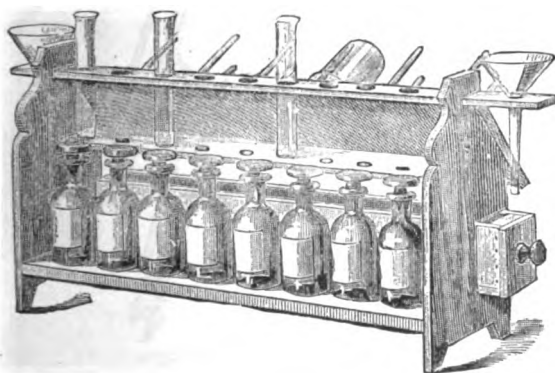
8243



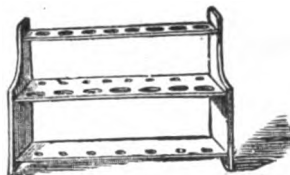
8238



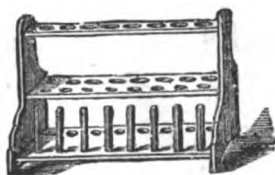
8239



8244



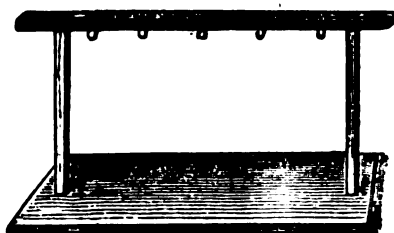
8235



8236

- 8240. Ditto, ditto, polished mahogany . . . . . \$3 00
- 8241. Supports, for twenty-five tubes, plain, shape like figure 8235, each . . . . . 1 00
- 8242. Ditto, ditto, with drying pins, each, shape like figure 8236 . . . . . 1 25
- \* 8243. Ditto, ditto, for 18 test tubes, according to Prof. Erlemeyer, with drying points, shelves to hold four funnels, and drawer for pipettes, glass stirrers, etc. . . . . \$2 50
- \* 8244. Ditto, ditto, heavier, fitted with 18 test tubes, 2 pipettes, 2 stirrers, 8 re-agent bottles, 2-2½ inch funnels . . . . . \$5 00
- 8245. Support for test tubes, round, with pins, plain . . . . . 1 20
- 8246. Ditto, ditto, round, with pins, polished . . . . . 1 50

- \* 8247. Supports, frame of wood, for supporting U tubes, potash bulbs, etc., etc. \$2 00
8248. Ditto, ditto, according to Fresenius, with adjustable cross arm ..... 2 00
- \* 8249. Ditto, of wood, to hold strainers and felt filtering bags, filtering frames.
- |  | 6   | 8   | 10  | 12  | 14 inches square. |
|--|-----|-----|-----|-----|-------------------|
|  | .20 | .25 | .30 | .35 | .40 cts.          |
- Shellbach's and Gay Lussac's stand, (see Supports, Universal.)
- Supports of any design made to order according to drawings, at reasonable rates.
- \* 8250. Support Tables, movable up and down, foot heavily loaden with lead, of hard wood. Height if drawn out,
- |  | 9   | 12  | 15  | 20     | 25 inches. |
|--|-----|-----|-----|--------|------------|
|  | .75 | .85 | .90 | \$1 00 | 1 20       |
- 8251. Ditto, ditto, if finely polished, 25% extra.
- \* 8252. Ditto, ditto, with triangular iron feet. .... 90, \$1 00 1 50 1 60 1 75
- |                      | 9 | 12 | 15 | 20 | 25 inches. |
|----------------------|---|----|----|----|------------|
| Height if drawn out, |   |    |    |    |            |
8253. Ditto, ditto, with extra vertical sliding fork to support horizontal tubes, 35 cts. additional.
- \* 8254. Ditto, ditto, extra large made of oak wood, with triangular base. Height if drawn out, 36 inches. .... \$5 00
8255. Support table, wood, sliding horizontally on brass rod, the adjustable clamp fitting any iron ring stand, complete. .... \$1 00
8256. Ditto, ditto, all wood, fitting our wooden supports, complete. .... 1 00
- Swedish Filtering Paper, (see Filtering Paper.)



8247



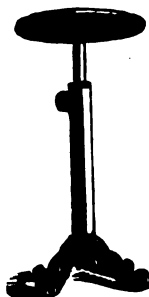
8249



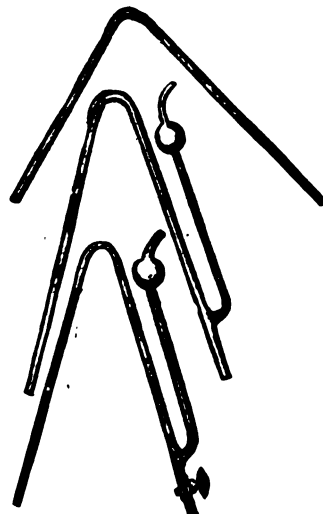
8251



8252



8254



8257-8258-8259

- \* 8257. Syphons, glass, plain,
- |  | 6   | 12  | 15  | 18  | 24  | 30 inches. |
|--|-----|-----|-----|-----|-----|------------|
|  | .15 | .20 | .25 | .30 | .40 | .50 cts.   |
- \* 8258. Ditto, ditto, with suction tubes, for acids, best German.
- |  | 6   | 8   | 12  | 18  | 22  | 25  | 30 inches. |
|--|-----|-----|-----|-----|-----|-----|------------|
|  | .25 | .30 | .35 | .45 | .60 | .75 | \$1 00     |
- \* 8259. Ditto, ditto, ditto, with Geissler's glass stop-cock and suction tube, best German.
- |  | 8      | 12   | 18   | 25   | 30 inches. |
|--|--------|------|------|------|------------|
|  | \$1 25 | 1 50 | 1 75 | 2 00 | 2 25       |
8260. Syphon, with valve ground in. .... \$1 50
- |  | Medium | Large |
|--|--------|-------|
|  | \$1 75 | 2 00  |



- \* 8261. Syphons, for drawing off acids, poisons, etc. according to Bode and Wimpf, put in operation by blowing, made of glass, a very useful apparatus.....\$4 00
- \* 8262. Ditto, of glass, to take out samples from barrels, etc., so-called thief glasses. See also No. 8303a. Small, 50 cts.; large, 75 cts.
8263. Syringes, all kinds, patent, glass, metal, rubber, family, etc., constantly on hand. Tables, for glass-blowers, (see Glass Blower's Table.)
8264. Ditto, of assay values.....25 cts.  
Table Lights, see Burners.
8265. Tapers, wax, to burn in oxygen, per box.....15 cts.  
Technological Tables. See Appendix, pages 282 and 283.
- 8266. Telegraphic instruments, outfit for learners, key sounder, battery chemicals, wire and book of instructions.....\$3 75
- 8267. Telegraphic instruments, learner's outfit, extra quality.....7 00
- \* 8267a. Test Glasses, Bohemian, tall form, pointed, for urinary analysis.

1	2	4	6	8 oz.
.15	.20	.25	.30	.35 cts.

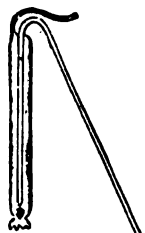
8268. Ditto, ditto, conical, with lip.....25 cts.

Contents,	$\frac{1}{2}$	1	2	4	6	8 oz.
	.15	.15	.20	.25	.30	.35 cts.

Test Lead, (see our list of Chemicals.)

8269. Test Papers, as Litmus, blue and red, Turmeric...per quire 75 cts.

8269a. Ditto, ditto, Fernambuc, Potassiumjodide, acetate of lead, Brazil-wood, Congo, Quajac, Huckleberry, Iodide of starch, per quire \$1 00



8261



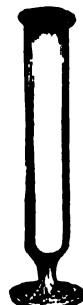
8262



8267a



8271



8274



8270

## TEST TUBES.

- \* 8270. Test Tubes, of best imported glass, even thickness, well annealed, free of lead. They come 6 dozen in a box, each tube wrapped in paper, or bundled in dozens.

Length, 3x $\frac{1}{2}$	4x $\frac{1}{2}$	5x $\frac{1}{2}$	5x $\frac{3}{4}$	6x $\frac{3}{4}$	6x $\frac{1}{2}$	7x $\frac{1}{2}$	8x1	10x1	12x1 in.
Dozen, .20	.25	.30	.30	.35	.35	.50	.60	\$1 25	2 00
Gross, \$1 75	2 50	2 75	3 00	3 65	3 75	5 00	6 50	12 00	20 00

- \* 8271. Ditto, ditto, with side neck, best German glass.

Each,	5	6	8	10 in.
Dozen,	.10	.12	.15	.20 cts.
—	.75	.85	1 30	2 00

8272. Test Tubes, of infusible Bohemian glass.

5	6	7	8	10 in.
.8	.10	.12	.18	.25 cts. piece.

8273. Ditto, ditto, with side neck, (like figure 8271.)

5	6	7	8	10 in.
.12	.15	.20	.25	.40 cts. piece.

- \* 8274. Test Tubes, on foot, with lid, plain, well made.

4	5	6	7	8	10 in.
.8	.10	.12	.14	.18	.20 each.
.75	.85	\$1 00	1 20	1 50	2 00 per dozen.

## \* 8275. Test Tubes, on foot, graduated in cubic centimeters.

5 CC in $\frac{1}{2}$	10 CC in $\frac{1}{2}$	15 CC in $\frac{1}{2}$	25 CC in $\frac{1}{2}$
.25	.40	.45	60 cts.

Ditto, ditto, without foot, graduated, see color carbon tubes.

8276. Test Tube **Brushes**, plain, galvanized wire, each..... 5 cts.  
 \* 8277. Ditto, ditto, ditto, brass wire..... 8 cts.  
 \* 8278. Ditto, ditto, ditto, with sponge end, each 10 cts. (thick or thin,) per dozen... 90 cts.  
 \* 8279. Test Tube **Clamp**, made of wood usual form, (see figure 5955), each ..... 15 cts.  
 8280. Ditto, ditto, ditto, with spring, larger, (see figure 5956,) each..... 40 cts.  
 \* 8281. Ditto, ditto, ditto, Bunsen's, made of brass, each..... 30 cts.  
 \* 8282. Ditto, ditto, ditto, holder, metal on wooden handle..... 40 cts.  
 \* 8283. Test Tube **Cleaners**, a rod, with sponge end, each.... 8 cts.  
 8284. Ditto, ditto, ditto, a rod, on whale bone..... 10 cts.  
 Test Tube **Stands**, (see Supports.) Test Tubes for color tests, see Carbon Color Tubes.  
 8284a. Test Tube holder, Chapman's new form,  
 small ..... 15 cts. Large..... 30 cts.



8275



8277



8281



8283



8285



8278

## THERMOMETERS.

Superior quality, all made of Weber's resistance glass.

- \* 8285. Thermometers, chemical, scale clear engraved on the stem, white back, or on enclosed milk glass scale, best European make, in pasteboard case, very exact. Graduated up to about 100° Celsius ..... \$1 25  
 " " 200° Celsius..... 1 40  
 " " 250° Celsius..... 1 60  
 " " 300° to 360° Celsius..... 1 75  
 " " 212° Fahrenheit..... 1 25  
 " " 350° Fahrenheit..... 1 40  
 " " 600° Fahrenheit..... 1 75

8286. Ditto, same as above, stem, graduated on one and the same thermometer in 300° Celsius and 600° Fahrenheit, \$2.50, or 100° C. and 212° F. .... \$1 75

- 8286a. Thermometers of Jena normal glass, with German government certificate of corrections, each, in 1-1 ..... \$7 00 Without certificate ..... \$4 00  
 in 1-10 ..... 9 50 ..... 5 60

(If with magnifying front 20% extra)

**8287. Thermometers, chemical, Standard engraved on stem.**

0-100° C in 1-5	100-200° C in 1-5	0-100° C in 1-10	100-200° C in 1-10
\$3 25	3 25	4 00	4 00

**\$3 25**

**8 25**

**4 00**

4 00

**8238. Ditto, chemical**, engraved on the stem, with white enameled back, the cylindrical mercury bulb of the same diameter as the stem, the vacuum above the mercury column is filled with nitrogen to prevent a separation of the latter when the instrument is used for higher degrees. From 0-360° or 400° C in 1-10° or Fahrenheit 750° .....\$3 50 each.

8289. Ditto, normal, giving kind of glass and coefficient of expansion, of superior workmanship, imported to order in 1-5 or 1-10 degrees, and very sensitive. Price, according to range. . . . . \$10.00 to 20.00

\* 8290. Thermometers on paper scale, enclosed in glass tubes, European make, very reliable.

Divided up to 130° Fahrenheit, 7 inches, each.....60 cts.

"	"	130°	"	12 inches, each.....	70 cts
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" " 2129 " ..... 80 cts.

"	"	400°	"	.....	\$1 00
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“ “ 600° “ ..... 1 20

"	"	100° Celsius.....	80 cts.
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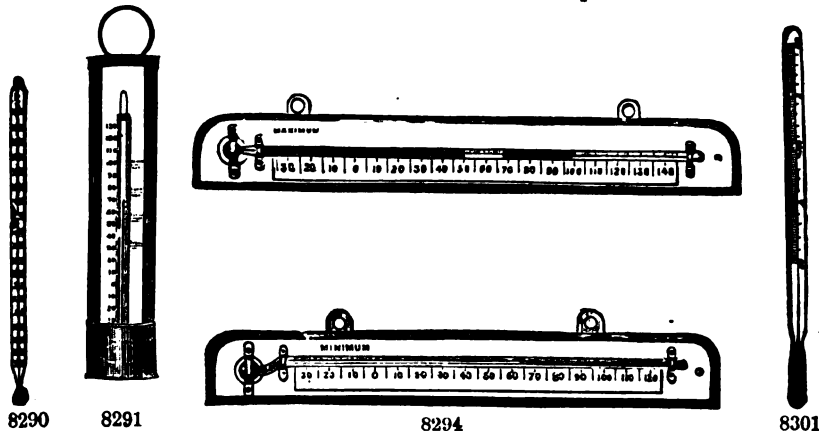
100	Celsius	.....	50	Fhs.
"	"	200°	"	..... \$1 00

200	.....	\$1 50
300	.....	1 20

"	"	100° Celsius and 212° Fahrenheit	90 cts.
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<b>6290a.</b>	<b>Thermometers for acid chambers, bent at right angles,</b>	<b>240° F. or 100° C., each</b>	<b>\$1 50</b>
" "	" " " " " "	porcelain scale . . . . .	2 00

porcelain scale..... 2 00



* 8291. Ditto, common, in tin case, length,	7	8	10	12 inches.
	.15	.18	.20	.25

**.15**

.18

**.20**

**.25**

8291a. Ditto, for sugar, short, 0-50° C.....	50 cts.
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8291b. Ditto, for dairy, short, 0-150° F.....	25 cts.
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8293. Ditto, self-registering alarm for incubators, bacterioscopical work, etc. \$2 00 to 5 00

\* 8294. Ditto, maximum and minimum, on board, each \$2 00. Both on one board \$3 00

8295. Ditto, maximum and minimum, in metal case, Hicks' patent.

8 in.

10 in.

12 in.

**\$6 00**

8 00

10 00

8296. Thermometers, wood frame, bathing, 12 in.....40 cts. 17 in.....75 cts.

○ 8297. Ditto, clinical, E. & A.....	75 cts.	Doz.....	\$8 00
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○ 8298. Ditto, ditto, ditto, two years old .....	\$1 00.	Doz.....	10 00
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○ 8299. Ditto, ditto, magnifying.....	1 25.	Doz.....	12 00
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8300.	Ditto, ditto, centigrade.	1 25.	Doz.	12 00
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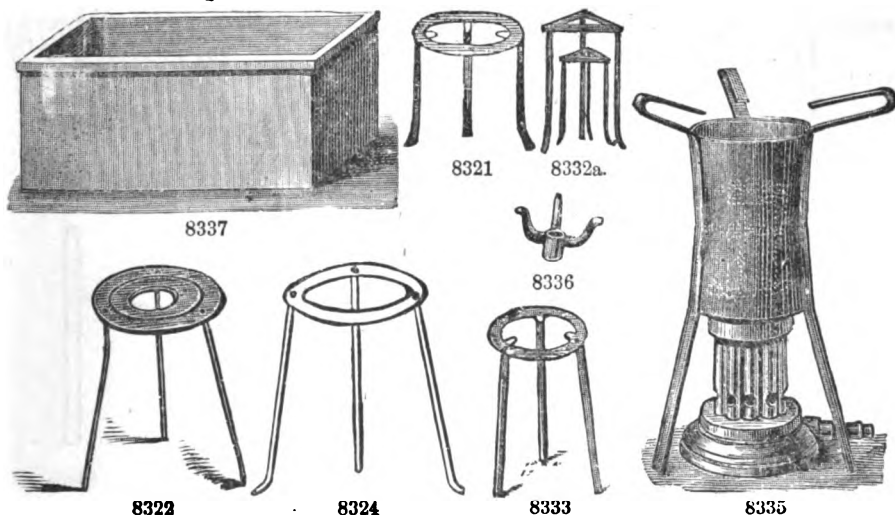
8300. Ditto, ditto, carpenter.....	1 25.	Doz.....	12 00
8301. Ditto, ditto, veterinary.....	1 25.	Doz.....	12 00

8302. Ditto, ditto, Hick's.....	1 50.	Doz.....	16 00
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Yale observatory certificates will be furnished for chemical and clinical Thermometers to order.



- |  |                       |
|--|-----------------------|
| 8320. Tripods, of iron, circular top, for spirit lamps, each.....                                  | 20 cts.               |
| * 8321. Ditto, ditto, brass, to take apart, very neat, each.....                                   | 50 cts.               |
| * 8322. Ditto, ditto, of iron, for Bunsen's burners, with two rings....                            | 25 cts.               |
| 8323. Ditto, ditto, three rings.....   | 35 cts.               |
| * 8324. Ditto, ditto, heavier, without rings, Bunsen's style.....                                  | 25 cts.               |
| * 8325. Ditto, ditto, ditto, with points..... See Cat 8333.....                                    | 30 cts.               |
| 8326. Ditto, ditto, very light, without rings.....   | 20 cts.               |
| * 8327. Ditto, ditto, large, diameter of ring 8 in. (same as Figure 8324).....                     | 40 cts.               |
| 8328. Ditto, ditto, with four rings.....   | 60 cts.               |
| 8329. Ditto, ditto, very large, diameter of ring 10 in.....  | 50 cts.               |
| 8330. Ditto, ditto, with 5 rings.....  | 90 cts.               |
| 8331. Ditto, diameter of ring 12 in.....   | 85 cts.               |
| 8332. Ditto, with 6 rings.....   | \$1 00                |
| * 8332a. Ditto, triangular, length of side,  | 5, 6, 8, 9 inches.    |
|  | .30 .40 .50 .70       |
| * 8333. Ditto, ditto, brass, to take apart, same as 8321 but 9 in. high....                        | 70 cts.               |
| 8334. Ditto, folding, of galvanized iron.....  | 60 cts.               |
| * 8335. Ditto, iron, with chimney, 3 sizes, for use with one and several tube Bunsen's<br>burners. | Small. Medium. Large. |
|  | .50 .60 .80           |
| * 8336. Tripod, to set on top of Bunsen's burners. Small.....                                      | 25 cts.               |
| Extra large.....   | 30 cts.               |



**Troughs, pneumatic, mercury, etc., (see Nos. 7005-7010.)**

- \* 8337. **Troughs, stoneware, acid and alkali proof, for galvanic baths and other chemical and technical use, well glazed.**

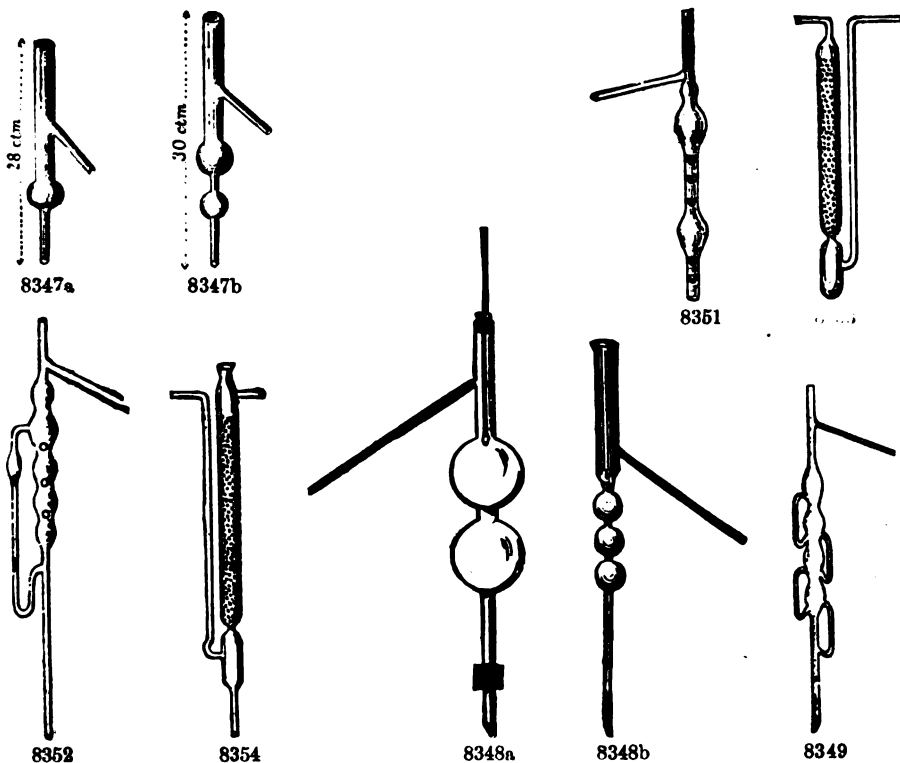
Other chemical and technical use, well gazed.						
Inside dimension,	12x9x9,	12x12x12,	16x12x12,	16x16x12,	20x16x12 inches.	
Capacity,	4	7	9	12	15 gallons.	
Price,	\$2 50	4 35	5 50	7 50	9 25	
Inside dimension,	24x16x12,	24x20x12,	32x20x12,	16x16x16,	20x16x16 in.	
Capacity,	18	23	30	16	20 gals.	
Price,	11 00	13 50	15 00	10 00	12 50	
Inside dimension,	24x20x16,	32x20x16,	40x20x16,	24x20x20,	32x20x20 in.	
Capacity,	30	40	50	38	50 gals.	
Price,	15 00	20 00	25 00	18 50	25 00	
Inside dimension,	40x20x20,	24x24x24	32x24x24	40x24x24	32x28x28	40x28x28 in.
Capacity,	63	54	72	90	98	123 gals.
Price,	31 00	26 50	36 00	44 50	49 00	60 00

Troughs of other dimensions, not exceeding a capacity of 125 gallons and a length, width or height of 40 inches are made to order; any desirable changes, as tubulations, etc., will be added according to directions.

These stoneware troughs are perfectly acid and alkali proof, but should not be used for boiling acids in, nor should they be exposed to sudden heat.

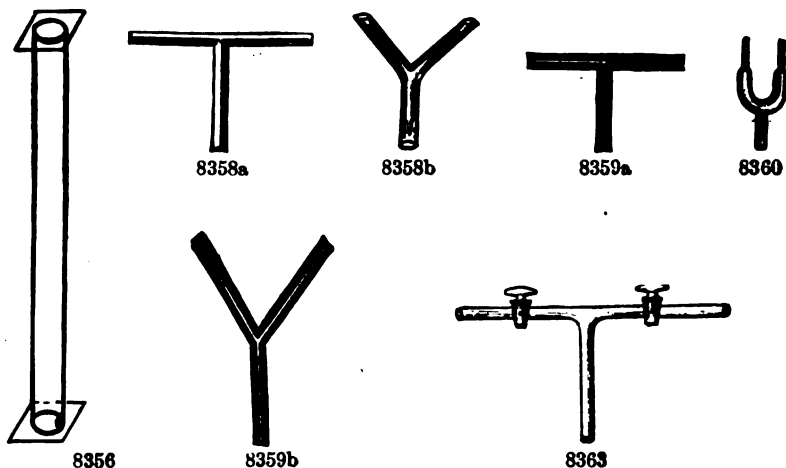


- \*\* 8347. Tubes, for fractional distillation. 1 bulb, 6 in. long.....25 cts.  
 1 bulb, 8 in. long.....35 cts. 2 bulbs, 7 in. long.....35 cts.  
 2 bulbs, 9 in. long.....45 cts.
- \* 8348. Ditto, for fractional distillation, according to Wurtz.  
 Small, 2 bulbs...65. Medium, 2 bulbs.....70. Large, 2 bulbs.....80  
 " 3 " .....70. " 3 " .....80. " 3 " .....85
- \* 8349. Ditto, ditto, ditto, according to Lebel & Henninger.  
 2 bulbs.....\$1 00. 3 bulbs.....\$1 25  
 4 bulbs.....1 80. 5 bulbs.....2 25
8350. Ditto, for fractional distillation, according to Hallock, collecting all that passed the thermometer bulb. Small.....75 cts. Large.....\$1 00
- \* 8351. Ditto, for fractional distillations, provided with baskets of platinum wire gauze.  
 Length, 10½ in. 12½ in. 15½ in.  
 Price, \$4 00 5 00 8 00
- Extra platin gauze per gramme.....75 cts.



- \* 8352. Ditto, for fractional distillation, with glass valves, according to Glinsky. Large size.....\$2 00. Medium.....1 75  
 Small.....1 50
- \* 8353. Tubes, for the absorption of gases, according to Babo, filled with glass beads. \$1 25
- \* 8354. Ditto, ditto, according to Emmerling, filled with glass beads.....1 50
- 8354a. Ditto, for filtering, with glass-powder, sand, etc., after Fresenius, see Filtering Tubes.....25 cts.
- Ditto, for fat extraction, set of 2, after Mohr, (see 6265.)
8355. Ditto, palladium, Hempel's, for hydrogen determination, (see figure 5233-7) .50 cts.  
 Filling.....\$1 50 extra.

- \* 8356. Tubes, for water analysis, s. c., 2-foot tubes (new form, like Neasler's Jars. Same price).....\$2 50
8357. Tube, Bunsen's, of brass, to be set into a Bunsen's burner, producing yellow flame, for blow-piping, (see figure 5862), each.....20 cts.
- \*\* 8358. Ditto, of glass, **T** or **Y** form, bore
- |                |                |                |                |          |
|----------------|----------------|----------------|----------------|----------|
| $\frac{1}{12}$ | $\frac{1}{15}$ | $\frac{1}{20}$ | $\frac{1}{25}$ | 1 inch   |
| .12            | .15            | .20            | .25            | .50 cts. |
- \*\* 8359. Ditto, ditto, of heavy barometer tubing.
- |            |                     |                                      |
|------------|---------------------|--------------------------------------|
| 3-16 inch. | $\frac{1}{4}$ inch. | $\frac{1}{2}$ inch outside diameter. |
| .25        | .30                 | .40 cts.                             |
- \* 8360. Ditto, of glass, to connect one large pipe with two small ones.
- |                       |               |               |              |
|-----------------------|---------------|---------------|--------------|
| Diameter of thick end | $\frac{1}{4}$ | $\frac{1}{2}$ | 1 inch.      |
|                       | .25           | .30           | .50 .60 cts. |
8361. Ditto, of brass. Outside diameter.
- |               |               |               |          |
|---------------|---------------|---------------|----------|
| $\frac{1}{4}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 1 inch.  |
| .45           | .50           | .60           | .75 cts. |
8362. Ditto, **T** or **Y** form, of brass.
- |            |               |               |               |             |
|------------|---------------|---------------|---------------|-------------|
| Bore, 3-16 | $\frac{1}{4}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 1 inch.     |
| .25        | .30           | .35           | .40           | .50 65 cts. |
- Ditto, ditto, of glass, with Geissler's stop-cocks, see Glass Stop-cocks.



- \* 8363. Ditto, for connections, **T** form, with two Geissler's stop-cocks.....\$2 50
- Tubes, for reductions, see (Reduction Tubes.) Ditto, for combustions, (Combustion Tubes.) Ditto, for drying, (Chloride Calcium Tubes.) Ditto, for nitrogen determinations, (see Nitrogen Tubes.) Ditto, of rubber, (see Rubber Tubing. Ditto, specimen, (see Specimen Tubes.)
8364. Tube Brushes, very handy for cleaning narrow glass and rubber tubes....5 cts.  
Dozen.....20 cts.
8365. Ditto, ditto, one yard long, each.....15 cts.
- Tubing, of porcelain, (see Combustion Tubes of Porcelain.)
8366. Turmeric Paper, quire.....75 cts.
- 8367. Twine, gray, strong, pound, in  $\frac{1}{2}$  lb. packages.....40 cts.
- 8368. Ditto, pink, best, strong, pound.....80 cts.
- 8369. Ditto, pink, fine sea island, dozen.....40 cts.
- 8370. Ditto, box, of metal, or glass.....50 cts.
8371. Underplates, for acid bottles, etc., of porcelain, from 2 $\frac{1}{2}$  to 5 inches diameter.  
Price each .....12 to 40 cts.
- 8371a. Undines,
- |     |     |     |       |
|-----|-----|-----|-------|
| 1   | 2   | 4   | 6 oz. |
| .20 | .25 | .30 | .35   |



## URINE TEST INSTRUMENTS.

—\* 8372. **Fermentation Saccharometer.** For the estimation of sugar in Urine. By Max Einhorn, M. D.

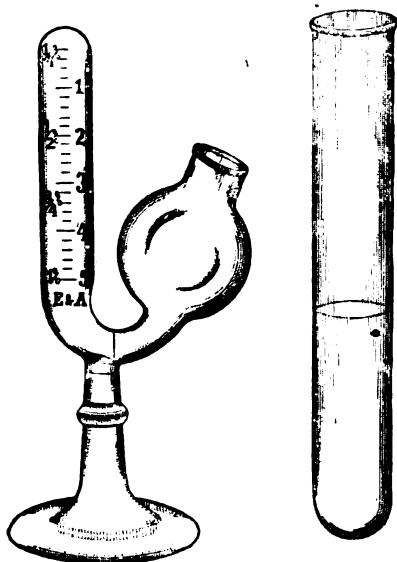
## DIRECTIONS.

Take one gramme of commercial compressed yeast (or 1-16 of a cake of Fleischmann's Yeast), shake thoroughly in the graduated test-tube with 10 C.C. of the urine to be examined. Then pour the mixture into the bulb of the Saccharometer. By inclining the apparatus the mixture will easily flow into the cylinder, thereby forcing out the air. Owing to the atmospheric pressure the fluid does not flow back but remains there.

The apparatus is to be left undisturbed for 20 to 24 hours in a room of ordinary temperature.

If the urine contains sugar, the alcoholic fermentation begins in about 20 to 30 minutes. The evolved carbonic acid gas gathers at the top of the cylinder, forcing the fluid back into the bulb.

On the following day the upper part of the cylinder is filled with carbonic acid gas. The changed level of the fluid in the cylinder shows that the reaction has taken place and indicates by the numbers — to which it corresponds — the approximate quantity of sugar present.



8372

If the urine contains more than one per cent. of sugar, then it must be diluted with water before being tested.

Diabetic urines of straw color and a specific gravity of 1018-1022 may be diluted twice; of 1022-1028, five times; 1028-1038, ten times.

The original (not diluted) urine contains in proportion to the dilution two, five or ten times more sugar than the diluted urine.

In carrying out the fermentation test, it is always recommendable to take besides the urine tested, a normal one, and to make the same fermentation test with it.

The mixture of the normal urine with yeast will have on the following day only a small bubble on the top of the cylinder. That proves at once the efficacy and purity of the yeast.

If there is likewise in the suspected urine a small bubble on the top of the cylinder, then no sugar is present, but if there is a much larger gas volume, then we are sure that the urine contains sugar.

Single tubes 75 cents each. For the convenience of physicians, we have put it up in a set consisting of two (2) Saccharometers and one graduated test tube, for \$1.50 net.

8372a. Urea Apparatus, according to Marshall, on foot, complete. Digitized by Google

8372b. Ureometer, Dr. Piffard's. . . . . \$1.75

- \* 8373. **Apparatus for the rapid estimation of Urea**, designed by Charles Doremus, M.D., Ph.D. Professor Adjunct of Chemistry and Toxicology, Bellevue Hospital Medical College.

The apparatus shown in the cut is designed for the rapid approximate estimation of urea. It yields, when the test is carefully made, results closely in accord with the theoretical.

That determination of the quantity of urea voided, is of importance in diagnosis, has long been felt, but the difficulties met with in the manipulation of the tests which were to supply the data, were too irksome to physicians.

#### REAGENTS NECESSARY.

The Sodium hydrate solution (100 grammes to 250 C.C. of water, or 6 ounces to 1 pint water) will keep indefinitely when tightly stoppered.

The Bromine may be removed from the bottle in which it is kept by means of the nipple pipette.

1 C.C. suffices for a test. More can be removed if a quantity of hypobromite is to be made up. Some care must be exercised in handling the Bromine since it gives off irritating fumes—but by the above method of procedure no inconvenience ought to be experienced.

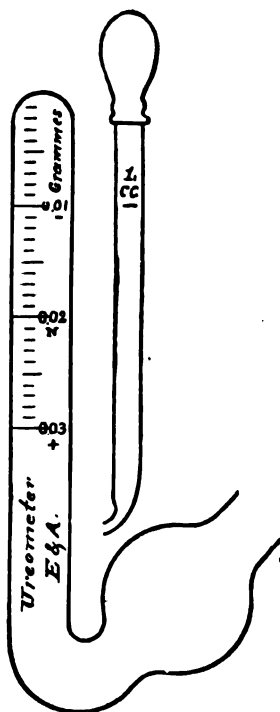
The concentrated hypobromite must be diluted with its own volume of water. This can be done approximately.

The long arm and the bend of the ureometer must be filled with the hypobromite.

Having washed the pipette draw up exactly 1 C.C. of urine, pass the pipette through the bulb of the ureometer as far as it will go in the bend. Compress the nipple *gently and steadily*. The urine will rise through the hypobromite and the urea instantly decompose giving off nitrogen gas.

Withdraw the pipette after the urine has been expelled, taking care not to press the nipple hard enough to drive the air out after the urine, and read the volume of gas after allowing the froth to subside. *The ureometer indicates according to its graduation either in milligrammes of urea in 1 C.C. of urine or grains of urea per fluid ounce of urine.*

The ureometer is graduated for 65° F. and upon an experimental basis.



In the office of the consulting physician or in hospitals where a quantity of hypobromite can be made every day or so, this apparatus should supply a long felt need.

After use, simple washing will leave it ready for subsequent tests.

- Price of apparatus, complete, in box, with pipette. .... \$1 25

Solution Sodie hydrate used with the above apparatus, 60 cts. per pound, including bottle.

Bromine, 25 cents per ounce, bottle included.

- A support with clamp like 8172 for the apparatus will be supplied if desired for .90 cts.

- On glass foot, like 8372. .... 25 c's. extra

— 8374. **Esbach's Albumenometer, for the quantitative estimation of albumen in urine.** Directions for using the instrument.

To use the instrument, fill the same to U with the urine, and to R with the test-solution; then mix by agitation. Close the tube by a rubber stopper and lay the whole aside for 24 hours to obtain a perfect and well settled precipitation.

Each of the main lines of division to which the accumulated precipitation reaches represents one gramme of Albumen in one litre of urine.

The test-solution consists of

10 grammes Picric Acid, to coagulate the Albumen.

20 grammes Citric Acid, to keep the Phosphates in solution.

Water sufficient to make one litre.

2 grammes Picric Acid represent one gramme of Albumen.

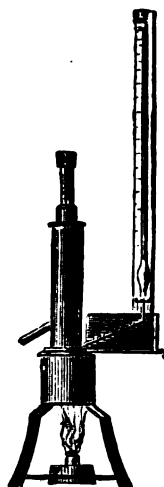
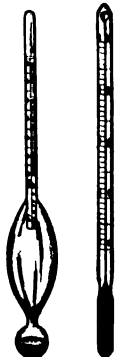
Test-solution, per pound, with glass-stoppered bottle.....40 cts.

Instrument, in box, price, 75 cents.

\* 8375. **Apparatus for determining specific gravity of urine.** Correct Urinometer, according to Dr. Squibb, with Thermometer Cylinder and Table for corrections, price, \$2 00; without Thermometer.....\$1 00



8375



8382

8376. **Urinometer, according to Neubauer & Vogel, set of two, with cylinder, in box.....1000-1020 and 1020-1040. ....\$1 00**

8377. Ditto, ditto, 1000-1060, with cylinder, in box, single instrument.....60 cts.

8378. Ditto, ditto, with fine Thermometer in body, with Cylinder, in box.....\$1 60

See also Apparatus for Urinary Analysis and Hydrometers for Urine. pp. 32 to 34.  
Ure's Eudiometer, see Gasometer Tubes.

8380. **Urine Glasses, conical, pointed, with lip and foot, 3 oz. capacity, dozen...3 00**  
Urine Pipettes, cylindrical, see Pipettes. U Tubes, see Tubes.

8381. **Vacuum Apparatus, to evaporate liquids in vacuum, we furnish to order of any desired capacity. See Supplement. Cat.**

8381a. **Vapor Density Estimating Apparatus, according to Victor Meyer, improved form, similar to figure 5288.....\$1 00**

Glass flask with long wide neck, glass bulb, with side tube.....1 00

○ Glass bottles with ground stoppers, dozen.....1 20

Ditto, ditto, without ground stoppers, dozen.....85 cts.

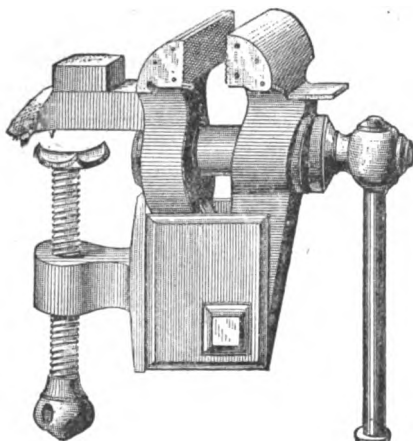
(s. Fresen. Zeitschr. 1880, p. 214.) Price complete, with  $\frac{1}{2}$  dozen of each bottles and support.....(See also No. 5195).....\$5 70

\* 8382. **Alcoholometer, Vaporimeter, according to Geissler, for estimating the percentage of alcohol of very diluted alcoholic liquids, complete with tables of calculation and of instructions for use.....\$20 00**

Vials, see Bottles.

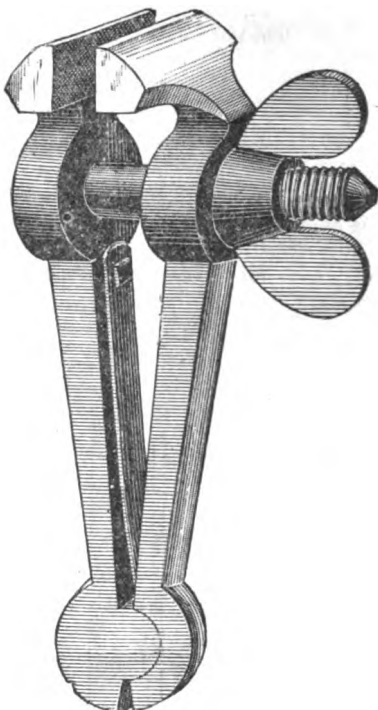
—* 8383. Vises, steel, with anvil.	2 lb.	3 lb.	4 lb.	6 lb.
	\$1 50	1 60	2 00	2 50
—* 8384. Ditto, hand.	4 in.	5 in.	6 in.	
	.50	.60	.80 cts.	
○* 8385. Ditto, Stephens, lever.	2 in.	3 in.	5 in.	
	\$5 00	6 00	10 00	

- \* 8386. Voltmeter, according to Dr. W. A. Levison, to measure the strength of electric currents; platina plates can be taken out; for description, see Greer's Dict'y of Electricity, 1862, N. Y. \$10 00  
Support for same.....\$3 00

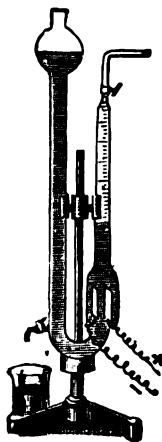


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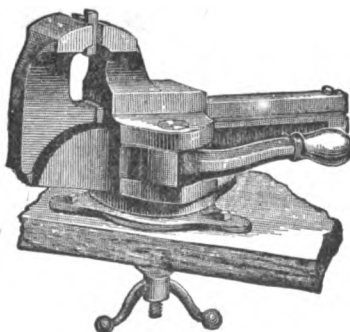
8387



8384



8386



8385



8389

- \* 8387. Volumeter, according to Thoerner, for taking the specific gravity of solids, especially coke and charcoal, etc., determining at the same time the porosity of these substances; graduated from 0 100 in 1.5 CC.; inclusive jar.....\$4 50  
8388. Ditto, Gay Lussac's, for light or heavy liquids.....75 cts.  
\* 8389. Washing Bottles, Faraday's, fitted with rubber stoppers and tubes; flexible tubes, if so ordered.
- |           |                     |                     |        |         |        |       |                    |
|-----------|---------------------|---------------------|--------|---------|--------|-------|--------------------|
| Contents, | $\frac{1}{2}$ pint. | $\frac{1}{2}$ pint. | 12 oz. | 1 pint. | 24 oz. | 1 qt. | $\frac{1}{2}$ gal. |
|           | .35                 | .40                 | .45    | .50     | .60    | .75   | \$1 00             |
8390. Ditto, ditto, if provided with cork stoppers. .... 20% less.

## \* 8391. Washing Bottles, according to Prof. Bunsen, each.

4 oz.	8 oz.	16 oz.
.40	.50	.60 cts.

8392. Ditto, ditto, according to Prof. Silliman, with large wide neck on top for rubber stopper, otherwise like 8391.....8 oz., 65 cts.

## \* 8393. Ditto, ditto, after Drexel, with tube passing through glass stopper.

Capacity,	4 oz. 120 CC.	8 oz. 250 CC.	16 oz. 500 CC.	32 oz. 1000 CC.
	.75	\$1 00	1 25	1 50

## \* 8394. Ditto, ditto, cylinder form, same capacity and price.

8395. Ditto, ditto, according to Liebig, see Edulcorating Apparatus.

\* 8396. Ditto, ditto, Vogel's.  $\frac{1}{2}$  pint.....70 cts. 1 pint .....80 cts.  
 Quart.....\$1 00.  $\frac{1}{2}$  gal.....1 20

## \* 8397. Washing Flasks, all glass, tubes ground into the neck of the bottle for ether, etc.

Capacity,	4 oz. 120 CC.	8 oz. 250 CC.	16 oz. 500 CC.	32 oz. 1000 CC.
	.75	\$1 00	1 25	1 50



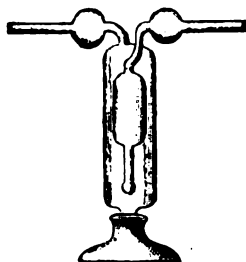
8391



8394



8395



8396



8393c



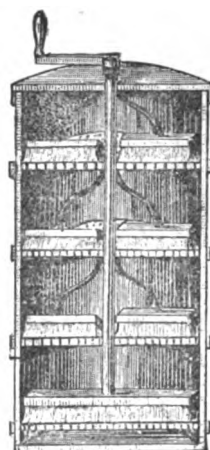
8392



8397



8397a



8397d

## \* 8397a. Ditto, ditto, with name etched in.....60 cts. extra.

8397b. Wash Bottle, with brass fittings, for use with retort in making oxygen, of superior construction, capacity one quart, (see fig. 5212.) .1 quart, \$3 00..  $\frac{1}{2}$  gal. 4 00

## \* 8397c. Wash Bottle Tubes, according to Vogel, short.....40 cts.

Long .....40 cts.

Other Washing Bottles, (see Woulff's Bottles.)

Washing Cylinders, (see Drying Cylinders.) and Gas Washing Cylinders.

## \* 8397d. Washing, Sifting and Separating Apparatus, 4 sieves.....\$25 00

\* 8398. Washing Bottle, Muencke's. 200 CC. 400 CC.  
 \$2 00 2 50

## 8399. Ditto, ditto, Hempel's, to hang, for gas analysis.

Capacity,	100 CC.	250 CC.
	.75	\$1 00

8400. Ditto, ditto, for bromine, etc., tubes provided with stop-cocks.....8 oz. \$2 50

- \* 8401. Washing Apparatus, according to Kjeldahl.....\$1 50  
 \* 8402. Washing or Sifting Apparatus, for separating soils for agricultural analysis, with stop-cock and cubic centimeter graduation.....\$3 50  
 \* 8403. Washing Bulb, according to Liebig.... 25 cts.  
 \* 8404. Wash Bottle, top attachment.

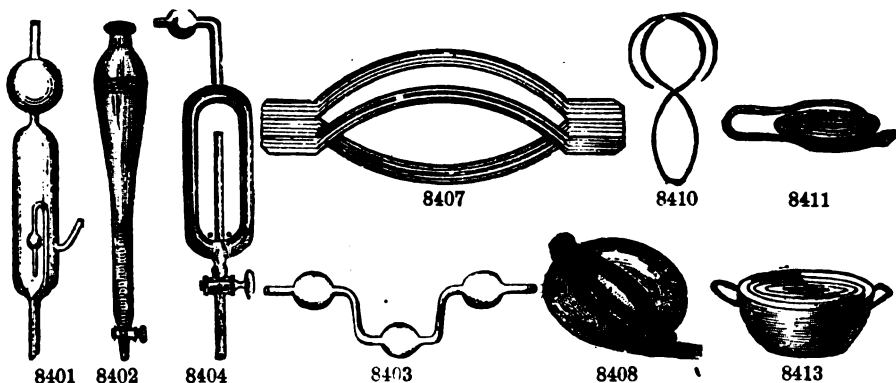
Capacity,	100	250	500 CC.
With stop-cock,	\$2 00	2 50	3 00
Without stop-cock,	1 00	1 50	2 00

See also Gas Washing Bottles.

8405. Watch Glasses, best imported, well annealed, deep form, edges ground, used for covering beakers, etc.

Diameter,	1	1½	2	2½	3	3½	
Per dozen,	.20	.25	.25	.75	1 00	1 25	
Diameter,	4	4½	5	6	7	8	9
Per dozen,	1 50	1 75	2 00	2 50	3 50	4 50	6 00

8406. The 2 inch Watch glasses we have in three styles, flat, half-deep and deep, the deep shape is 20 cts. higher per dozen than the other.



- 8406a. Watch glasses, Minots.....25 cts Dozen.....\$2 50  
 \* 8407. Watch-Glass Clips, of brass, nickel plated, small.....15 cts.  
 Large.....20 cts.  
 \* 8408. Ditto, ditto, with two 2 inch watch-glasses, ground tight....30 cts.  
 8409. Ditto, ditto, with two 2½ inch watch glasses, ground tight.....40 cts.  
 \* 8410. Watch-Glass Springs, Bunsen's. Diameter, 2 2½ inches.  
 .20 .25 cts.  
 \* 8411. Ditto, ditto, with two glasses. Diameter, 2 2½ inches.  
 .35 .45 cts.  
 8412. Watch Springs, for burning in oxygen, per doz.....25 cts.  
 Water Decomposition Apparatus, see Apparatus, Hofmann's.

## WATER BATHS.

- \* 8413. Water Baths, of entirely improved make, heavy copper, tin lined, with copper handles, steam escape and small cover to keep the bath closed when not in use. In these baths everything is rivetted and nothing soldered, bottom part all in one piece.

Diameter,	4	5	5½	6	8	10 in.
Number of Cover and Rings,	4	5	5	6	7	8
Each, complete,	.80	.90	\$1 10	1 25	2 00	4 50

- 8413a. Made of Aluminium, imported to order.

- \* 8414. Water Bath, with constant level, according to Prof. Kekule, a very useful apparatus, made like our other water baths of heavy copper, the whole resting upon an iron tripod.

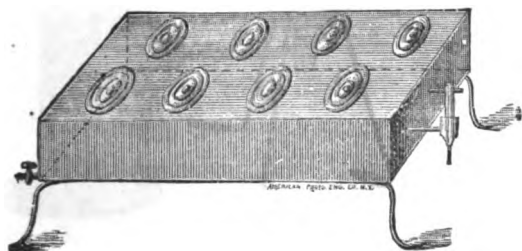
Diameter of bath,	5	5½	6	8 in.
With tripod,	\$2 25	2 50	2 75	3 50

- \* 8414a. Ditto, ditto, without tripod. 1 75    2 00    2 25    3 00

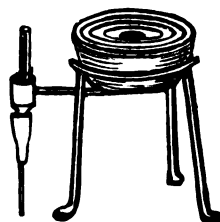
- \* 8415. Water Bath, of porcelain, for drying filters, poison analysis, etc.

Diameter,	4	5	6 in.
	\$1 10	1 40	1 75

- \* 8416. Ditto, ditto, of iron, nickel plated, with concentric rings. . . . . 6 in. \$1 25



8414



8414



8419



8415



8414a



8416



8417

- \* 8417. Ditto, ditto, of agate ware, (enameled iron) with tin lined copper rings.

Diameter,	5½	6½	8	9	10	12½ inches.
	\$1 60	2 50	3 00	3 50	6 00	7 50

Ditto, porcelain rings for same, see rings of porcelain.

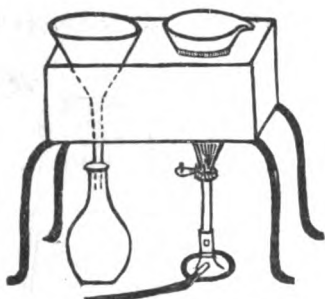
- \* 8418. Ditto, ditto, of heavy copper, arranged to be heated by steam, stove or burners; size of the square copper box, 13½x29 inches, including five smaller and three larger openings, all provided with rings and cover. The bath having a steam pipe and a brass stop-cock to draw off the water, is provided with Kekule's constant regulator, and supported by four movable iron feet, complete . . . . . \$22 00

8418a. Ditto, ditto, same as above, with two openings instead of eight, one of 7 inch diameter with 6 rings, the other of 12 inch with 10 rings. . . . . 22 00

- \* 8419. Ditto, ditto, same as above, square, with four or eight openings, with rings, resting on four legs, measuring 13½x14½ inches . . . . . \$16 00

\* 8420. Water Bath, of heavy copper, with rings and funnel heater, taking any size funnel: resting on four movable legs, complete, with level regulator.....\$15 00

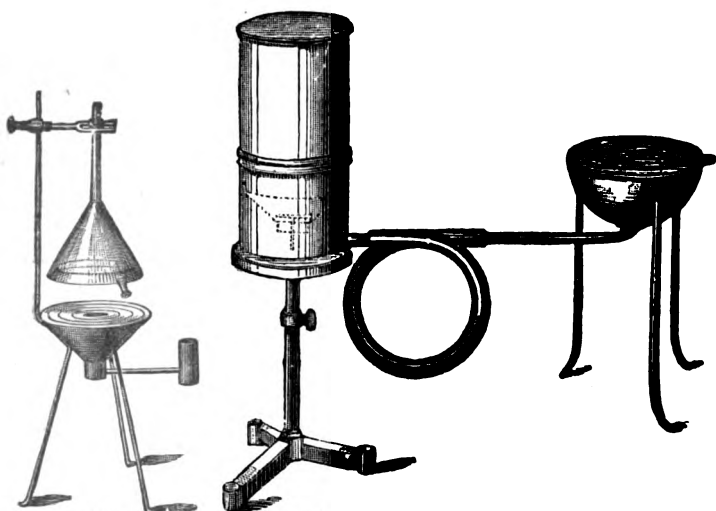
\* 8420a. Ditto, ditto, after Kekule, with stand, water level and holder for Meyer's vapor funnels and porcelain rings. Diameter, 6 in. 8 in.  
\$6 00 8 00



8420



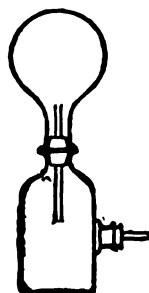
8422



8421



8420a



8425

○\* 8421. \* 8422. Ditto, ditto, with level, after Fresenius, with tripod and regulator, complete, like figure.

5	6	8 in.
\$5 00	6 00	8 00

8423. Support table for 8421, as per drawing.....\$1 00 to 1 50 extra.

— 8424. Ditto, ditto, after Bunsen, see Desaga 1069, consisting of Support of iron, Copper bath, with gauge, Porcelain funnel, Glass plate with perforations, Glass Cylinders, Water Level regulator, complete with star burner.....\$30 00

\* 8425. Ditto, ditto, regulator, all glass. Pint .....\$1 00  
Quart..... 1 50



\* 8426. Water Bath, or Filter Dryer, of porcelain, for drying precipitates on the filter ..... (See fig. 6285) ..... \$1 50

\* 8426a. Water Bath, with burner and gauge protection for heating inflammables.

Diameter,	6 in.	8 in.
	\$6 00	8 00

Other Water Baths, (see Drying Baths.)

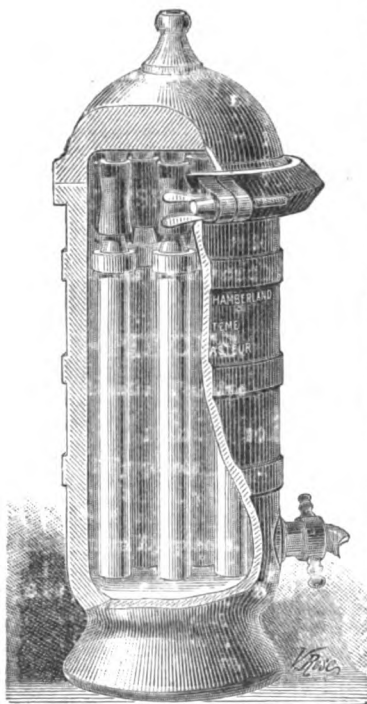
8427. Water Bottle, best Bohemian glass,  $7\frac{1}{2}$  gallon capacity, for holding distilled water for the use in laboratories, with ground in glass stop-cock ..... \$12 00

8427a. Ditto, ditto, without ground in stop-cock ..... \$10 00

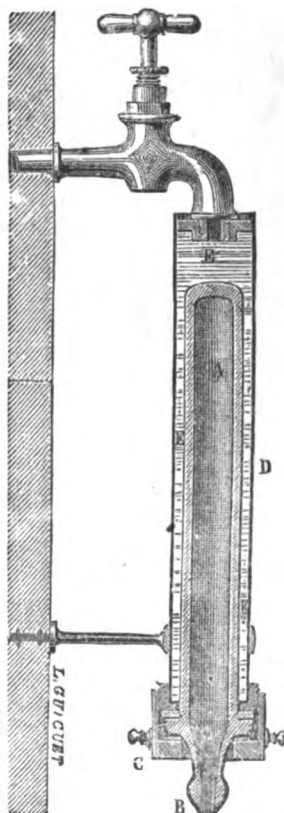
8427b. Ditto of stone ware, with stopper and stop-cock. \$12 00. without stop-cock. 10 00



8426a



8427c-b



8427c-a

○ 8427c. Water Filter, Pasteur. Chamberland, the only filter giving water free of bacteria, in ordering state whether used for the bacterioscopical laboratory or for the household.

\* a Single filter with stop-cock ..... \$10 00

3 tube filter ..... 20 00

\* b 6 tube filter ..... 32 00

12 tube filter ..... 50 00

40 tube filter ..... 125 00

Single tubes ..... 1 10

8427d. Pasteur Filter Tube, small pencil size, for bacteriological work, each. 20 cts.

8847e " " " large " " " " " " " " 25 cts.

- \* 8428. **Fletcher's Instantaneous Water Heater**, giving instantly a continuous supply of pure water at any temperature, from boiling to lukewarm, free from products of combustion, and suitable for all purposes.

Designed to hang over a laboratory sink.

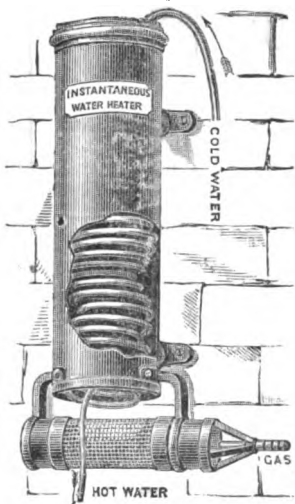
In two sizes; large size, height 19 inches, projection from wall, 8 inches; small size, height 18 inches, projection from wall, 6 inches.

**RECENT IMPROVEMENTS** — A pilot light attachment, which keeps the water in the coil constantly warm, and automatically lights the burner when the gas is turned on; also a coupled gas and water tap, operated by one lever, a turn of which lights the burner and gives an immediate flow of warm water. The pilot light can be furnished alone or in combination with the coupled taps.

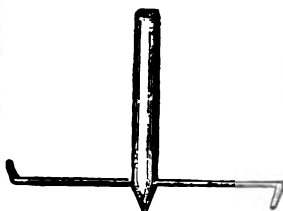
**NOTE.** — The light must be applied to the gauze before the gas is turned on.

#### PRICES.

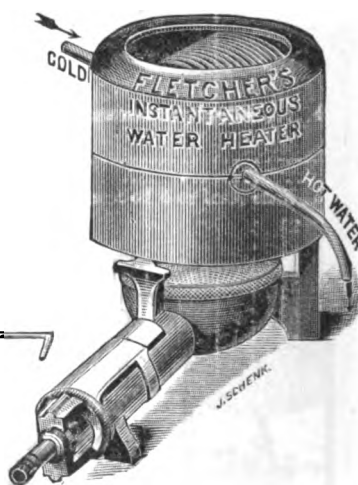
No. 147. Water Heater, small size .....	\$11 00
No. 147, A. " " " " with pilot light.....	13 00
No. 147, B. " " " " " " and coupled taps.....	20 00
Nickel plating, extra .....	2 50
No. 147, C. Water Heater, large size.....	15 00
No. 147, D. " " " " with pilot light.....	17 00
No. 147, E. " " " " " " and coupled taps.....	25 00
Nickel plating, extra .....	\$1 00
No. 347. Horizontal, all brazed for laboratory .....	15 75



8428



8430



8429

- \* 8429. **Fletcher's new instantaneous Water Heater**. This gives, when connected with a cistern or water tap, hot water in three seconds after the gas is lighted, either boiling, hot, warm, or cold, the water being pure, and fit for cooking purposes. It will deliver sufficient hot water for washing hands in one minute. It is simple, cheap, not liable to get out of order or wear out, and is equal in power to the small size Instantaneous Water Heater above.

#### PRICES.

No. 247. Water Heater, without burner .....	\$3 00
With burner, No. 47, complete, as engraved.....	5 00

- \* 8430. **Water Wheel**, Segner's, for sulphuric acid works, (Gay Lussac's towers) demonstrating the principle of Reacting Hydrostatic Pressure, made of glass, according to size..... Price, \$1 50 to 3 00 each

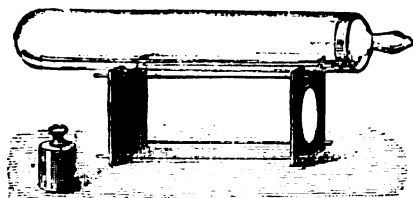
- 8430a. **Water Still**, Jewell's, iron, No. 3, \$15 00; copper, No. 4.....\$18 00

See special circular.

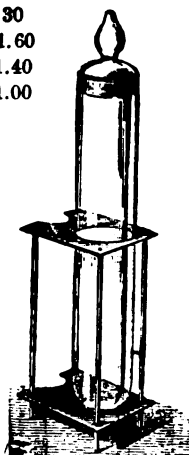
8431. **Weighing Capsules or Scoops of Aluminium.** Price, according to size and weight.....each, \$2 50
8432. Ditto of glass, horn or rubber.....each, 25 cts.
- \* 8433. **Water Hammer.**.....75 to \$1 00  
Weights, see Balances and Weights. Weighing Bottles, see Bottles for Weighing.
8434. **Weighing Tubes,** (see also Bottles for Weighing), set of two, one sliding into the other, each 2 in. long, per set.....20 cts.
- \* 8434a. Supports for Weighing Tubes of metal.....\$1 50
8435. **Wicks,** plain, for alcohol lamps, per bundle.....5 cts.
8436. Ditto, round, for Berzelius', Rose's, etc., lamps, (in ordering please state for alcohol or kerosene,) per doz.....25 cts.
8437. **Wick Holder,** of brass, each. Small.....5 cts. Medium.....8 cts. Large.....10 cts.

## 8440. Copper wire on spools.

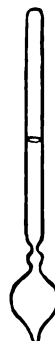
	No. 16	18	20	22	24	27	30
$\frac{1}{2}$ Pound.	.80	.90	1.00	1.10	1.20	1.40	1.60
$\frac{1}{4}$ "	.70	.75	.80	.90	1.00	1.20	1.40
$\frac{1}{8}$ "	.60	.65	.70	.75	.80	.90	1.00



8434a



8434a



8433

- 8437b. Wire, nickel.....lb. \$2 50. Ounce.....20 cts.
8438. Wire, very fine, of chem. pure iron containing 99.85% Fe, pound.....\$1 75
- 8439. Ditto, of best piano steel, pound.....1 25
8440. Ditto, of pure copper, for prices see above.  
Ditto, coated with gutta percha for batteries, etc. See 8444-8448.
8441. Wire gauze, copper, for combustions, etc.  
20 40 60 80 100 mesh.  
.70 .75 .85 \$1 20 1 70 sq. ft.
8442. Ditto, ditto, iron, correct thickness of wire for heating.  
6 10 14 16 20 40 60 80 mesh.  
.20 .25 .28 .30 .30 .45 .70 \$1 00 sq. ft.
- If made of finer wire it is less in price.
- 8442a. Ditto, ditto, of iron, to put under dishes, piece of 4 in. square.....6 cts.  
5 in. square.....8 cts. 6 in. square.....10 cts.  
8 in. square.....20 cts.
8443. Brass, gauze.  
10 20 30 40 60 80 100 mesh.  
.50 .50 .55 .60 .65 .90 \$1 30 sq. ft.
- 8443a. Ditto, ditto, of brass, piece of 4 in. square, 10 cts., per square foot.....50 cts.
- 8443b. Ditto, ditto, of platina, for fractional distillation etc., per gramme  
Coarse.....\$1 00 Fine.....\$1 05

8443c. Wire Gauze, of nickel, about No. 30, per sq. ft. .... \$2 50  
 Per square inch. .... 2 cts.

Wire Holders, for platinum wires, see Holders.

— 8444. Wire, cotton coated, for office and call bell.

No.	12,	14,	16,	18,	19	20	
Per pound,	35	52	90	132	200	239 feet.	1 lb 30 cts.

— \* 8445. Single wire, single coat, gutta percha covered.

No.	16	18	20	22	24	26	28	31	Brown Sharp's gauge
	.6	.5	.4	.3	.3	.2	.1½	.1	ct. per ft., less by quantities.

— \* 8446. Double wires. No. 24. .... 8 cts. No. 18. .... 15 cts. per ft., less by quantities.

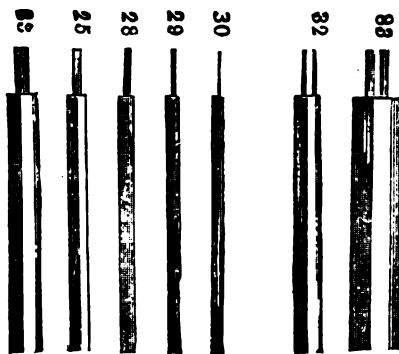
— 8447. Ditto, coated with cotton, for electro magnets, etc.

Nos.	18	20	22	24	26	28	30	32	38	B. & S. gauge.
Per pound,	.60	60	76	90	1 10	1 35	1 65	2 00	9 00	

— 8448. Ditto, coated with silk, for coi's, etc., see figure 8445.

Nos.	18	19	23	25	28	29	30	32	B. & S. gauge.
Per pound,	\$1 15	1 25	1 50	1 80	2 40	2 75	3 00	3 50	

Woulff's Apparatus, for washing and absorbing gases, (see figure 5113, Apparatus.)



8445

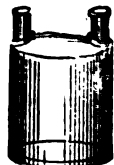
8446



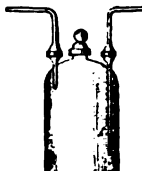
8450



8453



8449



8455

\* 8449. Woulff's, Bottles, of heavy German glass, with two round necks.

Capacity,	¼ pt.	½ pt.	1 pt.	1½ pt.	1 qt.	½ gal.	1 gal.	2 gal.
	.40	.45	.50	.70	.85	\$1 25	2 25	3 00

\* 8450. Ditto, ditto, with three necks, 10 per cent. higher.

— 8451. Ditto, ditto, light blown glass, two necks.

	2 ounce.	4 ounce.	6 ounce.	8 ounce.
Price,	.25	.40	.55	.85 cts.

— 8452. Ditto, ditto, ditto, three necks.

	2 ounce.	4 ounce.	6 ounce.	8 ounce.
Price,	.30	.45	.60	.95 cts.

\* 8453. Ditto, ditto, ditto, with outlet near the bottom and two necks.

Capacity,	1 pt.	1 qt.	½ gal.	1 gal.	2 gal.
	\$1 00	1 25	1 75	2 50	3 50

8454. Ditto, ditto, ditto, with three necks, 10 per cent. extra.

\* 8455. Ditto, ditto, with delivery tubes and stopper ground into the necks.

Capacity,	4	8	16	32 ounce.
Price,	\$1 00	1 25	1 60	2 00

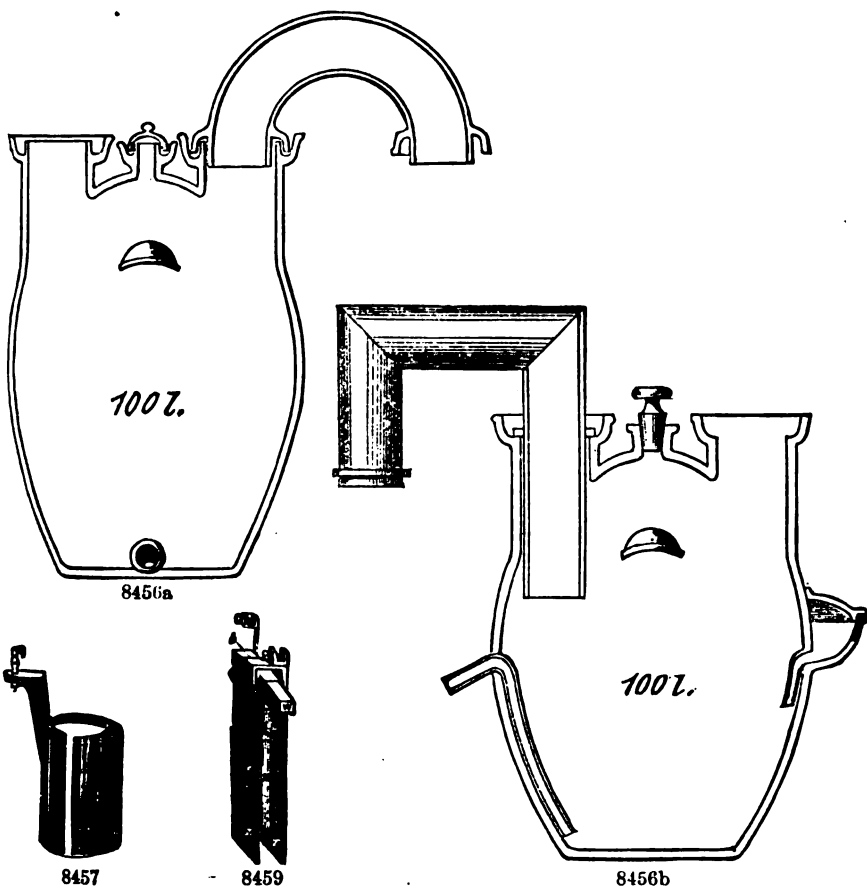
Q\* 8456. Woulff's Bottles, with or without outlet near the bottom, with water joint a or plain flange b. Of best German acid proof stone ware.

Capacity,	6	12	20	25	30	40 gallons.
Price,	\$4 25	5 50	7 25	9 00	11 00	13 25 each.
Capacity,	50	60	75	100	150	gallons.
Price,	\$18 00	22 00	28 50	38 50	50 00	each.

**Wurtz's Apparatus**, for fractional distillation, (see Tubes for Fractional Distillation).

\* 8457. Zincs, for Bunsen's Carbon Batteries, heavy cast zinc. See figure 5531.

Numbers,	1	1½	1¾	2
Height,	2½	3½	4½	7 inches.
Price,	.40	.45	\$1 00	2 00



— 8458. Ditto, ditto, rolled, with connections, (see figure 5532.)

Capacity,	½	1	2	4	8	16 pint.
Height,	2½	3½	4½	5½	7½	10 inches.
Price,	.25	.30	.40	.50	.80	1 30

— \* 8459. Ditto, plates, for Smee's, etc., batteries.

3½x5 inch.

4x8 inch.

Per pair, .50

.90 cts.

8460. Ditto, for gravity Battery, for 5x9 inch.

6x8 inch Jar.

.30

.40 cts.

8461. Ditto, ditto, ditto, crawfoot, for 5x9 inch.

6x8 inch Jar.

.30

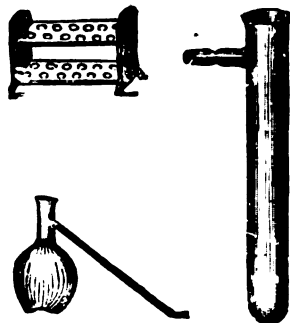
.40 cts.

8462. Ditto, for Leclanche's battery..... 10 cts.

8462a. Rolled Zinc plates, in strips 2 in. to 4 in. wide, pound..... 25 cts.

**8563. LIST OF APPARATUS AND CHEMICALS needed for the performance of the Experiments described in "The Young Chemist," by Prof. John H. Appleton.**

No.	No.	No.
1.—3 Beakers, 1-3.	19.—1 Platinum Foil, 1 inch square.	33.—1 Bunsen Burner with regulator.
2.—3 Blocks of wood, 3x3x1 inches.	20.—1 Platinum Wire, 3 in.	34.— 3 feet Rubber Tubing.
3.—1 Blow-pipe, brass, 8 in.	21.—1 Retort, two ounces, tubulated and stoppered.	35.—1 Blow-pipe Tube.
4.—1 Casserole, six ounce.	22.—12 Test Tubes, plain five inch.	36.—1 Two-ring Retort Stand, iron.
5.— Corks, doz. assorted.	23.—2 Test Tubes, plain, 8 inch.	
6.—1 Cork, fitted with glass jet.	24.—1 Test Tube, side neck, five inch.	
7.—1 Crucible, porcelain, 00.	25.—1 Test Tube, hard glass, eight inch.	
8.—100 Filter Papers, 4 in.	26.—1 Test Tube, side neck, eight inch.	
9.—1 Flask, plain, eight oz.	27.—6 Test Tubes, small, for blow-pipe, 3 inch.	
10.—1 Flask, side neck, two ounce.	28.—1 Test Tube Rack.	
11.—1 Funnel, two inch.	29.—1 Taper.	
12.—2 feet Glass Tubing, quill size.	30.—1 Pair Tweezers, 5 inch.	
13.—1 Jar, specie, quart.	31.—1 Tripod for lamp.	
14.—1 Lamp, for alcohol, two ounces.	32.—1 Watch Crystal, 2 inch.	
15.—1 Lamp Chimney.		
16.—1 Lead Cup, 2 inches.		
17.—1 Lead Post.		
18.—1 Magnet, 3 inches.		

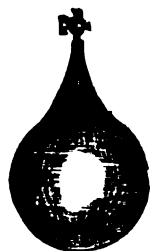


## CHEMICALS.

No.	No.	No.
1. Alum, 4 ounces.	21. Copper, wire, 1 dram.	44. Manganese, Sulphate, one ounce.
2. Aluminium, 1 dram.	22. Copper Pyrites, 1 ounce.	45. Mercuric Chloride, one dram.
3. Ammonic Carbonate, two ounces.	23. Copper Sulphate, 2 oza.	46. Mercuric Oxide, 1 dram.
4. Ammonic Chloride, four ounces.	24. Fluor-spar, 4 ounces.	47. Nickel, metallic, 1 dram.
5. Antimony, 1 ounce.	25. Gold Leaf.	48. " double sulphate of, and ammonia, 1 oz.
6. Argentic Nitrate, 1 dram.	26. Indigo, 1 dram.	49. Oxalic Acid, 2 ounces.
7. Arsenious Oxide, 1 ounce.	27. Iodine, 1 dram.	50. Paraffine, 2 ounces.
8. Bario Nitrate, 1 ounce.	28. Iron Pyrites, 1 ounce.	51. Phosphorus, 1 ounce.
9. " Chloride, 1 ounce.	29. Iron Sulphate, 4 ounces.	52. Potassium, 1 globe.
10. Beeswax, 2 ounces.	30. Iron Sulphide, 4 ounces.	53. Potassic Bromide, 1 oz.
11. Bismuth, 1 dram.	31. Iron Turnings, 1 ounce.	54. " Iodide, ½ ounce.
12. Bismuthic Nitrate, 1 dram.	32. " Wire, 1 ounce.	55. " Carbonate, 4 oza.
13. Bleaching Powder, four ounces.	33. Lead, sheet, 1 ounce.	56. " Chlorate, 2 oza.
14. Borax, 2 ounces.	34. " acetate, 1 ounce.	57. " Di-Chromate, two ounces.
15. Calcic Carbonate, marble, 4 ounces.	35. " nitrate, 1 ounce.	58. Potassic Ferrocyanide, 1 ounce.
16. Calcic Sulphate, 4 oz.	36. Lime, quick, 4 ounces.	59. Potassic Ferrieyanide, one ounce.
17. Carbon bi-sulphide, one ounce.	37. Lithic Carbonate, 1 dram.	60. Potassic Nitrate, 4 ounces.
18. Charcoal, 2 ounces.	38. Litmus Blocks, 1 ounce.	61. " Per manganate, 4 ounces.
19. Charcoal, animal 2 oz.	39. " Paper, 2 books.	78. Zinc Sulphate, 4 ounces.
20. Cobaltous Nitrate, 1 dram.	40. Magnesium, 2 feet.	79. " Metallic, 1 ounce.
62. Potassic Sulpho-cyanate, ½ ounce.	41. Magnesium Sulphate, four ounces.	80. Acid Acetic, 4 ounces.
63. Quills, 4 ounces.	42. Mercury, metallic, 2 oz.	81. " Chlorohydric, 4 oza.
64. Sand, 4 ounces.	43. Manganese Di-oxide, four ounces.	82. " Nitric, 4 ounces.
65. Seidlac, 1 ounce.	70. Stannous Chloride, 1 oz.	83. " Sulphuric, 4 ounces.
66. Sodium, 1 dram.	71. Starch, 1 ounce.	84. Alcohol, Ethylic, 4 ounces.
67. Sodid Chloride, 1 ounce.	72. Strontic Nitrate, 2 ounces.	85. Ammonic Hydrate, glass-stoppered bottles, 4 oz.
68. " Hydrate, 1 ounce.	73. Sulphur, 4 ounces.	
69. " Silicate, 1 ounce.	74. Sulphuretted Hydrogen Water, 2 ounces.	
	75. Tartar Emetic, 1 dram.	
	76. Tin Foil, 1 ounce.	
	77. Turpentine, 2 ounces.	

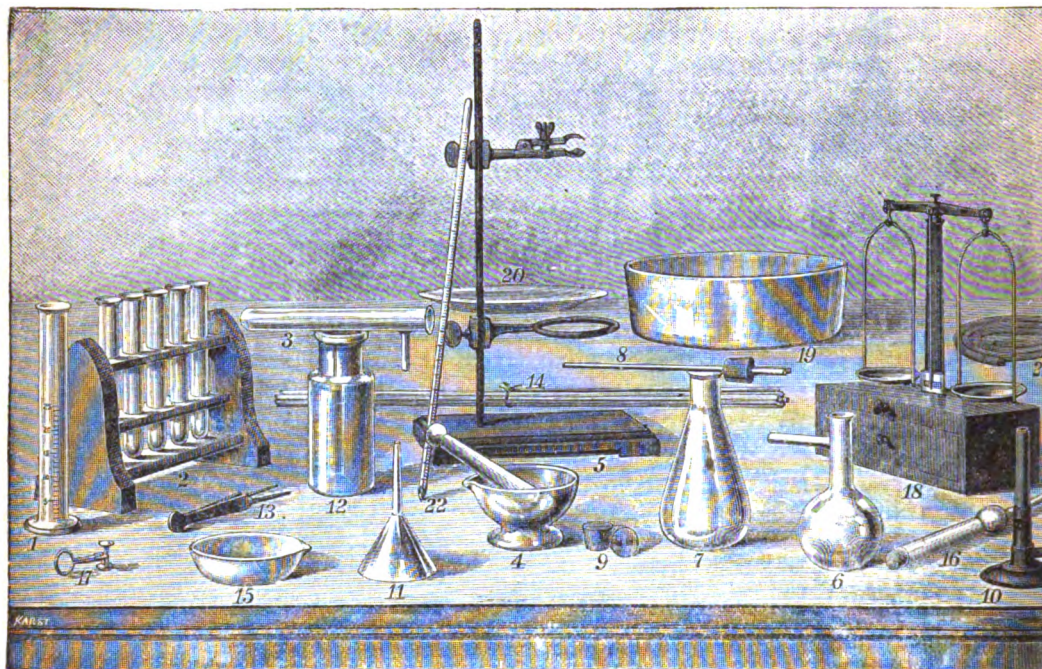
— The whole set complete.....\$20 00

—5566. Set to perform the Experiments in the New Edition of Steele's Chemistry, Apparatus and Chemicals complete.....\$25 00



- |   |  |   |
|---|--|---|
| No.   | No.                                      | No.   |
| 1.—Glass Funnel, 4 inches.                                    | 27.—40 grains Barium Chloride.           | 59.—1 dram Oxalic Acid.                         |
| 2.—Glass Spirit Lamp, four ounces.                            | 28.—2 ounces Bleaching Powder.           | 60.—1 Piece Phosphorus.                         |
| 3.—2 Porcelain Evaporating Dishes, 3x4 inches.                | 29.—2 ounces Bone Black.                 | 61.—10 grains Platinum Sponge.                  |
| 4.—Two 3 feet long Combustion Tubes, glass.                   | 30.—1 oz. Calcium Sulphate.              | 62.— $\frac{1}{2}$ dram Potassium Metal.        |
| 5.—1 Retort Stand, with two rings.                            | 31.—2 drams Camphor.                     | 63.—1 ounce Potassium Bichromate.               |
| 6.—1 dozen Assorted Test Tubes, 4, 5 and 6 in.                | 32.—2 drams Carbon Bisulphide.           | 64.—4 ounces Potassium Chlorate.                |
| 7.—1 Porcelain Mortar and Pestle, No. 6.                      | 33.—20 grains Cobalt Nitrate.            | 65.—1 ounce Potassium Ferrocyanide.             |
| 8.—1 Jeweller's Blow-pipe, 10 inches.                         | 34.—1 oz.—Copper Sulphate.               | 66.—1 ounce Potassium Hydrate.                  |
| 9.—2 dozen Assorted Corks.                                    | 35.—2 ozs. Ether Sulphuric.              | 67.—1 dram Potassium Iodide.                    |
| 10.—1 Evolution Flask, with rubber stopper, $\frac{1}{2}$ pt. | 36.—1 ounce Fluor-spar.                  | 68.—1 ounce Potassium Nitrate.                  |
| 11.—1 Funnel Tube, and delivery Tube.                         | 37.—1 piece Wire Gauze, 6 inches square. | 69.— $\frac{1}{2}$ dram Potassium Permanganate. |
| 12.—1 Florence Flask, with rubber stopper, 8 oz.              | 38.—1 three-cornered File, 4 inches.     | 70.—Gold Leaf 1 book.                           |
| 13.—1 Funnel and Delivery Tube.                               | 39.—1 Round File, 4 inches.              | 71.—20 grains Gun Cotton.                       |
| 14.— $\frac{1}{2}$ , 1-12, 1-16 and 1-24 oz. Florence Flask.  | 40.—6 inch Platin Wire.                  | 72.—1 lb. Hydrochloric Acid.                    |
| 15.—6 Assorted Rubber Connectors.                             | 41.—1 Lead Tray, 2 $\frac{1}{2}$ inches. | 73.— $\frac{1}{2}$ dram Indigo.                 |
| 16.—1 Delagrating Spoon.                                      | 42.—1 oz. Measuring Glass.               | 74.—15 grains Iodine.                           |
| 17.— $\frac{1}{2}$ lb. Glass Tubing.                          | 43.—25 CC Measuring Glass.               | 75.— $\frac{1}{2}$ ounce Sulphate of Iron.      |
| 18.—1 quart Alcohol.  | 44.—1 Pair of Scales.                    | 76.—1 ounce Sulphate of Iron.                   |
| 19.— $\frac{1}{2}$ ounce Alum.                                | 45.—1 Set Ounce Weights.                 | 77.—1 ounce Lead Acetate.                       |
| 20.—4 ounces Aqua Ammonia.                                    | 46.—1 Set Gramme Weights.                | 78.— $\frac{1}{2}$ ounce Lead Oxide.            |
| 21.— $\frac{1}{2}$ ounce Ammonia Chloride.                    | 47.—12 Sheets Filtering Paper.           | 79.—60 grains Nitrate Silver.                   |
| 22.—4 ounces Ammonia Nitrate.                                 | 48.—1 Nest Herdian Crucibles, large 55.  | 80.— $\frac{1}{2}$ dram Sodium Metal.           |
| 23.—20 grains Aniline.  | 49.—1 Pipe                               | 81.— $\frac{1}{2}$ ounce Sodium Biborate.       |
| 24.— $\frac{1}{2}$ ounce Antimon Metal.                       | 50.—1 Rubber Gas Bag, one gallon.        | 82.— $\frac{1}{2}$ ounce Sodium Carbonate.      |
| 25.—20 grains Antimon Tartrate.                               | 51.—1 Socket and Stop-cock.              | 83.—4 oz. Sodium Sulphate.                      |
| 26.—40 grains Arsenious Acid.                                 | 52.—1 Set Cork Bore, 1-6.                | 84.— $\frac{1}{2}$ dram Strontium Nitrate.      |
|   | 53.—4 ounces Manganese Peroxide.         | 85.— $\frac{1}{2}$ lb. Sulphur.                 |
|   | 54.—1 dram Mercury Bichloride.           | 86.—2 lbs. Sulphuric Acid.                      |
|   | 55.— $\frac{1}{2}$ dram Mercury Cyanide. | 87.—2 drams Tartaric Acid.                      |
|   | 56.— $\frac{1}{2}$ dram Mercury Oxide.   | 88.—2 drams Oil of Turpentine.                  |
|   | 57.— $\frac{1}{2}$ lb. Nitric Acid.      | 89.— $\frac{1}{2}$ dram Chloride Zinc.          |
|   | 58.—1 dram Ground Nutgalls.              | 90.—1 quart Distilled Water.                    |

\* 8570. Apparatus required for Cooley's Guide to Elementary Chemistry, as authorized by the editor to furnish, sufficient for a class of 12. By Teachers, No. 1. By Students, No. 2.



Cat. No.	No. 1.	No. 2.
6137. Cylinders on foot, lip, 25 c.c. to $\frac{1}{2}$ .....	2 pieces, \$0 70	1 dozen, \$4 00
8270. Test Tubes, 6x $\frac{3}{4}$ inch.....	1 dozen, 35	1 gross, 3 65
8271. Side Neck Tube, German, 6x $\frac{3}{4}$ inch.....	2 dozen, 24	1 dozen, 85
8272. Ditto, ditto, ditto, hard glass, 6x $\frac{3}{4}$ inch.....	2 ..... 30	1 " 1 80
6839. Mortar and Pestle, porcelain glazed, 3 $\frac{1}{2}$ inch.....	1 ..... 40	1 " 2 40
8236. Support, smaller size.....	1 ..... 45	1 " 5 40
5959. Clamp and Stand 8212.....	1 ..... 1 00	1 " 12 00
6348. Side neck Flask, round bottom, 150 c.c.....	2 ..... 60	1 " 3 60
6348. " " 250 c.c.....	2 ..... 35	1 " 4 00
6345. Beaker Flasks, 200 c.c., (6 oz.).....	1 ..... 40	1 " 2 40
6345. " " 500 c.c., ( 6 oz.).....	4 ..... 1 40	1 " 3 60
8010. Soft Rubber Stoppers, 2 holes, size to fit the 200 c.c. flasks, 6345.....	2 ..... 25	2 " 3 20
8010. Soft Rubber Stoppers, 2 holes for 500 c.c. flasks.....	4 ..... 80	1 " 2 25
8010. " " Size to fit side neck flask.....	2 ..... 25	1 " 1 00
6692a Alcohol Lamp, 4 ounces or Bunsen Burner 5809.....	1 ..... 45	1 " 5 25
6389. Glass Funnel, German, long thin stem, 3 $\frac{1}{2}$ inch.....	1 ..... 18	1 " 2 00
5676. Wide mouth bottles, 400 c.c.....	1 ..... 10	1 " 1 00
5676. Ditto, ditto, 200 c.c.....	1 ..... 06	1 " 60
6384. Forceps, steel, plain, 4 $\frac{1}{2}$ inch.....	1 ..... 10	1 " 1 20
6174. Porcelain Dishes, R. B., 3 $\frac{1}{2}$ inch diameter.....	2 ..... 70	1 " 4 00
5941. Chloride Calcium Tubes, 1 bulb, 6 inch.....	1 ..... 13	1 " 1 50
6929. Pinch-cocks, Mohr's, small.....	1 ..... 15	1 " 1 50
6540. Glass Tubing, 3-16, outside diam.....	1 pound, 50	2 pounds, 1 00
8015. Rubber Tubing, 3-16, black.....	3 feet, 30	18 feet, 1 80
8013. Ditto, ditto, $\frac{1}{4}$ inch, thick, white.....	3 feet, 39	piece, 1 56
8285. Chem. Thermometer, from -20 to 200° F.....	1 ..... 1 50	3..... 4 50
6282. Triangular file, 4 $\frac{1}{2}$ inch.....	1 ..... 20	3..... 60
Pan, enameled ironware, 8 inch diameter, 3 or 4 inch deep, straight sides.....	1 ..... 50	1 dozen, 5 75
6288. Filter Paper.....	1 qre., 35	4 qres., 1 40
5409. Becker's Balance, 3 ounces, no case.....	10 00 net	
5411. Ditto, ditto, with case.....	18 00 "	
5421. Hand Scales, 6 inch beam.....	1 40 "	$\frac{1}{2}$ doz. 7 00
5492. Weights, 20 gr. to 1 centigr. in block.....	.80 "	" 4 50
5465. Ditto, ditto, good grade, 50.0 to 0.001 gm. in lined box.....	3 00 "	" 17 00
Complete set, without balances and weights.....	\$13 10	less, \$3 61
If full set is taken, less 20% dis.....	2 62	20% dis. 16 56



— 8571. Chemicals required for illustration of Cooley's Guide to Elementary Chemistry, as authorized by the editor to furnish sufficient for a class of 12.

By Teachers, No. 1. By Students, No. 2.

	No. 1.	No. 2.
Acetic Acid, pure.....	1 lb., .31	2 lbs., .40
Alcohol.....	1 " .45	2 " .65
Alum..... (paper).....	$\frac{1}{2}$ " .10	$1\frac{1}{2}$ " .10
Ammonium carbonate, c.p.....	1 " .45	2 " .80
" chloride, c.p.....	1 " .30	$1\frac{1}{2}$ " .30
" hydrate.....	2 " .50	4 " .35
" nitrate, cryst.....	$\frac{1}{2}$ " .25	$1\frac{1}{2}$ " .45
Antimony, sol. chloride, c.p.....	$\frac{1}{2}$ " .30	$\frac{1}{2}$ " .40
Arsenious oxide, white arsenic.....	$\frac{1}{2}$ " .15	$\frac{3}{4}$ " .15
Barium chloride, c.p.....	$\frac{1}{2}$ " .15	1 " .25
Bismuth nitrate cryst., c.p.....	$\frac{1}{2}$ " .80	$\frac{3}{4}$ " 2 40
Bone black.....	$\frac{1}{2}$ " .10	1 " .10
Bromine.....	1 oz., .25	1 oz., .25
Calcium chloride, crude.....	1 lb., .20	2 lbs., .20
" " cryst., c.p.....	$\frac{1}{2}$ " .15	$\frac{1}{2}$ " .20
" oxide, quick lime.....	$\frac{1}{2}$ " .10	$\frac{1}{2}$ " .10
Carbon pencil, Elec. light, $\frac{1}{2}$ inch diam., round, 4 inches long.....	.5 " .25	15 " .60
Chrome Alum.....	$\frac{1}{2}$ " .10	1 " .15
Cobalt nitrate, c.p.....	1 oz., .30	$\frac{1}{2}$ " .65
Cochineal..... (paper).....	1 " .10	$\frac{1}{2}$ " .20
Copper, thin sheet.....	$\frac{1}{2}$ lb., .20	1 " .40
" wire, No. 18, naked.....	$\frac{1}{2}$ " .15	$\frac{1}{2}$ " .15
" wire, No. 18, covered with cotton.....	$\frac{1}{2}$ " .20	$\frac{1}{2}$ " .20
" wire, No. 20, " " ".....	$\frac{1}{2}$ " .25	$\frac{1}{2}$ " .25
Copper, chloride.....	2 oz., .14	$\frac{1}{2}$ " .30
" sulphate, c.p.....	$\frac{1}{2}$ lb., .25	$1\frac{1}{2}$ " .50
"Dutch metal" imitation gold leaf.....	1 book, .15	1 book, .15
Ferrous sulphate, pure.....	$\frac{1}{2}$ lb., .15	$1\frac{1}{2}$ lb., .15
" Sulphide, sticks..... (paper).....	1 " .25	3 " .75
Hydrochloric Acid, pure.....	.6 " 1 10	12 " 1 80
Iodine.....	1 oz., .35	2 oz., .65
Lead Acetate..... (paper).....	1 lb., .16	$1\frac{1}{2}$ lb., .24
Litmus cubes..... (paper).....	1 oz., .10	2 " .10
Magnesium ribbon..... (paper).....	2 ft., .10	6 ft., .20
" chloride, cryst.....	$\frac{1}{2}$ lb., .15	$\frac{3}{4}$ lb., .25
" sulphate, c.p.....	$\frac{1}{2}$ " .15	$\frac{3}{4}$ " .20
Manganese Di-oxide powder..... (paper).....	$\frac{1}{2}$ " .10	$1\frac{1}{2}$ " .15
" sulphate.....	$\frac{1}{2}$ " .25	$\frac{1}{2}$ " .40
Marble.....	1 " .10	2 " .15
Mercury, redistilled.....	.5 " 4 00	5 " 4 00
" bichloride (corr. sub.).....	$\frac{1}{2}$ oz., .10	1 " .90
" oxide, red.....	$\frac{1}{2}$ " .10	1 " 1 10
Nickel chloride.....	1 " .13	$\frac{1}{2}$ " .25

—8571. Continued.

		No. 1.	No. 2.
Nitric acid, pure.....	2 lbs.	\$0.60	7 lbs. \$1 1
Oxalic acid, cryst. c.p.....	¼	.20	1 " .5
Paraffine.....	1 "	.18	1 " .1
Phosphorus.....	2 oz.	.30	2 oz. .3
Potassium.....	1 dr.	.35	1 dr. .3
" bromide, c.p.....	¼ lb.	.30	1 lb. 1 0
" carbonate, c.p.....	¼ "	.20	1 " .5
" chromate.....	¼ "	.15	¼ " .3
" chlorate, cryst.....	¼ "	.15	1 " .2
" di-chromate.....(paper).....	¼ "	.10	1 " .1
" ferrocyanide.....(paper).....	¼ "	.10	1 " .3
" iodide, c.p.....	¼ "	1 10	¼ " 3 3
" nitrate, cryst. c.p.....	¼ "	.15	1 " .4
" sulphate, cryst. c.p.....	¼ "	.15	1 " .4
Platinum foil, medium thick, 1½ inch.....	2 pieces.	.80	6 pieces, 2 4
" wire, medium thick.....	3 in.	.10	24 in. .8
Pyrogallio acid.....	1 oz.	.35	3 oz. 1 1
Silver nitrate, cryst.....	2 "	1 20	¼ 2 2
Sodium.....	1 oz.	.35	3 oz. 1 0
" baborate.....(paper).....	¼ lb.	.10	1 lb. .1
" carbonate, c.p.....	¼ lb.	.25	1 lb. .5
" hydrate, c.p.....	¼ "	.45	1 " .8
" nitrate, dry.....	¼ "	.15	1 " .2
" sulphate, c.p.....	¼ "	.15	1 " .2
Strontium chloride.....	¼ "	.10	¼ " .1
" nitrate, c.p.....	¼ "	.25	1 " 1 0
Sulphur, flour.....	¼ "	.10	1 " .1
" roll.....	1 "	.10	1 " .1
Sulphur acid, pure, conc.....	9 "	1 35	18 " 2 1
Tartaric acid, cryst.....	¼ "	.15	1 " .3
Tin, granulated.....(paper).....	¼ "	.20	1½ " .6
Zinc, sheet.....	1 "	.25	1 " .2
" granulated.....	1 "	.20	1 " .2
Logwood chips.....	1 "	.10	1 " .1
Potassium hydrate, pure, by alc.....	¼ "	.45	1 " .8
Complete set.....		\$25 12	\$46 6
If full set is taken, less 10% discount.....		2 52	4 6
		Net, \$22 60	\$41 9
Teachers' set includes bottles.		Students' set \$4.80 extra for bottles.	

NOTE.—Chemicals, when bought in very small packages, are more costly in proportion than in larger quantities. Most substances will remain good a long time if properly cared for. It is therefore cheaper in the end to buy at the outset more than is required for a single course of experiments. But by dividing the quantities named in the above list (No. 1) by two, the actual need for a single course will be supplied, and the first cost of the set largely reduced.

# APPARATUS AND CHEMICALS AS PER LIST NO. 1 OF REMSEN'S LABORATORY MANUAL.

## APPARATUS.

1 Nest Beakers, 1-3.....	\$0 40	2 Sheets each red and blue Litmus-paper, \$0	20
1 Jeweller's Blowpipe, 8 inches.....	15	1 Horseshoe Magnet, 3 inches.....	20
7 Wide-mouth Flint Bottles, two each, 2, 4, 8, oz., and one 32 oz.....	50	1 Porcelain Mortar and Pestle, 3½ inches	45
1 Bunsen's Burner with regulator, or 6- oz. glass alcohol lamp, same price,	50	1 Piece Platinum Foil, 1x1½ inches.....	60
1 5-in. U-tube.....	25	6 inch medium Platinum Wire.....	20
2 doz. Assorted Corks.....	20	1 Plain Retort, 8 oz.....	30
1 Set Cork Borers, 1-6.....	1 00	1 Stopper Retort, 16 oz.....	55
1 Nest Hessian Crucibles, "threes".....	6	3 Ft. Rubber Tubing for gas, ¼ inch.	39
2 1½-in. Porcelain Crucibles.....	36	(Only needed if Bunsen's Burner is used.)	
1 25 CC. Grad. Cylinder.....	50	2 Ft. Rubber Tubing (for connections) ..	20
1 Deflagrating Spoon.....	25	1 3½ inch Sand-bath.....	15
1 each Evaporating Dish, 2½ and 3½ inch	40	Hand Scale, with weights.....	85
1 Lead Dish, 2 inches.....	25	1 Test-tube Stand.....	30
1 Round File, 5 inches.....	25	12 Test-tubes, 5 inches.....	30
1 Triangular File, 5 inches.....	25	1 Test-tube Brush.....	5
1 Pack White Filters, 4 inches.....	12	1 Test-tube Clamp.....	20
4 Flasks: one 4 oz., two 8 oz., one 16 oz.	80	1 Iron Tripod.....	30
1 Steel Forceps.....	20	1 Filter Stand (2 rings).....	50
2 Funnels, 2½ inches.....	24	1 Wire Triangle.....	5
2 Funnel Tubes, one 10 inches, one 15 inches.....	35	2 2-inch Watch-glasses.....	10
1 Gas Bottle, 8 oz., with two hole rubber stopper.....	40	1 Piece of Wire Gauze 6"x6".....	10
¼ lb. Assorted Glass Tubing 4-7.....	25	1 Piece Blue Glass 2"x2".....	10
¼ lb. Assorted Glass Rods.....	15	1 Piece Ground Glass, thin 4"x4".....	6
		1 5-inch Water bath.....	1 00
		2 Wire Clamp-supports.....	2 00
			<b>\$16 98</b>

## CHEMICALS.

4 oz. Acid Acetic, pure (bottle 5c. extra), \$0	10	2 oz. Antimony, powdered.....	\$0 10
4 " " Arsenious.....	10	2 " " Potassium Tartrate....	20
16 " " Hydrochloric (bottle 15c. extra)	10	2 " Barium Chloride.....	10
8 " " Nitric (bottle 12c. extra).....	10	4 " Calcium Chloride, fused.....	10
2 " " Oxalic.....	10	4 " " Sulphate.....	10
16 " " Sulphuric (bottle 12c. extra),...	10	4 " Carbon Disulphide (bottle 5c. extra)	10
1 " " Tartaric.....	10	8 " Animal Charcoal, powdered.....	10
2 " Alcohol, for experiments only (bot- tle 4c. extra).....	10	8 " Copper Foil.....	30
8 " Alum.....	10	4 " " Sulphate.....	10
4 " Ammon. Chloride.....	10	1 " " Oxide.....	15
8 " " Hydrate, concentrated (bottle 10c. extra).....	10	4 " Fluorspar, powdered.....	10
4 " " Nitrate.....	10	1 " Indigo.....	10
		1 " Iodine (bottle 2c. extra).....	25
		4 " Iron Filings, fine.....	10

## Apparatus and Chemicals as per List No. 1 of Remsen's Laboratory Manual—Continued

## CHEMICALS.

8 oz. Iron Sulphide .....	\$0 10	2 oz. Potassium Permanganate .....	\$0
4 " " Sulphate. ....	10	1 dram Sodium (bottle 3c. extra) .....	
4 " Lead Sheet .....	10	2 oz. Sodium Acetate .....	
4 " " Acetate .....	10	2 " " Bicarbonate .....	
2 " " Nitrate .....	10	4 " " Biborate (Borax) .....	
1 " " Peroxide .....	10	4 " " Hydrate (bottle 5c. extra) ..	
2 " " Sesquioxide .....	10	4 " " Nitrate .....	
1 " Litmus .....	10	4 " " Sulphate .....	
½ dram Magnesium Ribbon .....	10	8 " Sulphur, roll .....	
1 lb. Manganese Dioxide, powdered .....	10	4 " Tin, granulated .....	
1 oz. Mercury Red Oxide .....	10	16 " Zinc, granulated .....	
1 " Nutgalls, powdered .....	10	2 " " Sulphate .....	
2 " Paraffine .....	10	2 " Sodium Phosphate .....	
1 " Phosphorus (bottle 10c. extra) .....	15	1 " Magnesium Sulphate .....	
1 dram Potassium .....	30	1 " Sol. of Platinum Chloride .....	
2 oz. Potassium Bromide .....	10	1 " Potassium Chloride .....	
4 " " Carbon (bottle 5c. extra) .....	10	1 " " Chromate .....	
4 " " Chlorate .....	10	2 " Mercury .....	
4 " " Dichromate .....	10	2 " Mercuric Chloride .....	
2 " " Ferrocyanide .....	10	2 " Calc Spar .....	
4 " " Hydrate Sticks (bottle 5c. extra) .....	20	2 " Lead Carbonate .....	
1 " " Iodide (bottle 5c. extra) .....	25	1 " Ammonium Oxalate .....	
4 " " Nitrate .....	10		

\$9 1

## Apparatus and Chemicals for Remsen's Briefer Course in Chemistry

## APPARATUS.—LIST 1.

Arsenic tubes, 6 .....	\$0 30	Glass rod, 1 oz. ....	\$0 1
Beakers, nest (100-700 c. c.) 2-6 plain .....	90	Iron Pan, 5 in., 8037 .....	2
Blowpipe (Jeweler's) 10 in. ....	14	Iron stand, with clamp, 8172 .....	9
Bunsen burner .....	45	Mortar porcelain, 100 m. m., 6839 .....	5
Combustion tubing, 1 ft. ....	18	Retorts, 1 each, 60, 100, 250 c.c., tubulated .....	7
Corks, 2 doz., assorted .....	25	Rubber tubing, 3 ft., for burner 8013, ¼ in. ....	3
Crucibles, porcelain 2 (35-40 m. m.) R. M., 6, 7 .....	37	Rubber tubing, 2 ft., for connection 8015 ⅜ in. ....	2
Deflagrating spoon .....	25	Safety tube, 8024 .....	2
Evaporating dishes, 2 (75-100 m. m.) .....	48	Test tubes, 6 each, 6x½ ins. and 6x¼ ins .....	3
File, round, 5 in. ....	20	Test tube stand, 8232 .....	2
File, triangular, 5 in. ....	20	Thistle tube, 12 in. ....	1
Filter paper, 1 quire .....	35	Tripod, 8324 .....	3
Flasks, Florence, 1 each 50, 100, 250, 500, 750 c. c. ....	71	U tubes, 2 4x½ in. ....	2
Flasks, Woulff, 1-300 c. c. 3 neck .....	45	Watch glasses, 2-50 m. m. ....	1
Funnels, 1 each, 50, 90 m. m. ....	30	Wire: 1 ft. Magnesium, 6 in platinum .....	3
Gauze, wire, 6 x 6 in. ....	10		
Glass tubing, soft, ¼ lb. ....	15		

\$10 7

## Apparatus and Chemicals for Remsen's Briefer Course in Chemistry—Continued.

## APPARATUS.—LIST 2.

Burette, Mohr, graduated to $\frac{1}{10}$ c.c., 50 c. c., complete, 20%.....	\$1 50	Magnet, 6 ins., horseshoe.....	\$0 40
Cells, Bunsen, 2 Quart, 10%.....	2 20	Measuring glass, 4 oz., 10%.....	30
Cork borers, set 6.....	1 00	Pinchcock, Hoffman, medium, 20%.....	25
Condenser and tubing, 8024.—20 ins. 8012 6 ft., $\frac{1}{4}$ in., 20%.....	1 85	Scales, set, 8046, 20%.....	85
Gas measuring tube, graduated to $\frac{1}{4}$ c.c., 25 c.c., 20%.....	1 00	Weights, set, 5478, 20%.....	75
			<u>\$10 10</u>

## CHEMICALS.—LIST 3.

Acid, hydrochloric (conc.) $\frac{1}{2}$ lb., bottle, 12c. \$0 10	Lead peroxide, 1 oz.....	\$0 10
“ nitric (conc.) $\frac{1}{2}$ lb. .... bottle, 12c. 10	Litmus, 1 oz.....	10
“ oxalic, 1 oz.....	“ paper, red and blue, 1 sheet each	10
“ sulphur, (conc.) 2 lb. .... bottle, 15c. 10	Magnesium sulphate, 1 oz.....	10
Alcohol, 8 oz..... bottle, 8c. 20	Manganese dioxide, $\frac{1}{4}$ lb.....	10
Alum, 2 oz.....	Mercuric oxide, 1 oz.....	15
Ammonia (conc.) $\frac{1}{2}$ lb. .... bottle, 12c. 10	Mercury, 2 oz..... bottle, 3c. 10	
Ammonium, carbonate, 2 oz. .... bottle, 4c. 10	Minium, 1 oz.....	10
“ chloride, $\frac{1}{4}$ lb.....	Phosphorus, 1 oz..... bottle, 5c. 15	
“ nitrate, 1 oz.....	Potassium bromide, 1 oz.....	10
Antimony, 1 oz.....	“ carbonate, $\frac{1}{4}$ lb.....	10
Arsenic, trioxide, 2 oz.....	“ chlorate, $\frac{1}{4}$ lb.....	10
Barium chloride, 2 oz.....	“ chromate, 2 oz.....	10
Bismuth, $\frac{1}{4}$ oz.....	“ dichromate, $\frac{1}{4}$ lb.....	10
Bone black, 1 oz.....	“ ferrocyanide, 1 oz.....	10
Borax, 1 oz.....	“ hydroxide, 6 oz. .... bottle, 6c. 20	
Calcium chloride, $\frac{1}{2}$ lb. .... bottle, 8c. 10	“ iodide, 1 oz. .... bottle, 3c. 25	
“ fluoride, 1 oz.....	“ nitrate, 2 oz.....	10
Carbon bisulphite, 4 oz. .... bottle, 4c. 10	“ permanganate, 2 oz.....	10
Copper shavings, $\frac{1}{2}$ lb.....	Sodium, 1 dram..... bottle, 4c. 10	
“ oxide, 2 oz.....	“ carbonate, 2 oz.....	10
“ sulphate, $\frac{1}{4}$ lb.....	“ chloride, 1 lb.....	10
Ferric chloride, 1 oz.....	“ hydroxide, $\frac{1}{4}$ lb. .... bottle, 5c. 15	
Ferrous sulphate, 2 oz.....	“ nitrate, 2 oz.....	10
“ sulphide $\frac{1}{4}$ lb.....	“ phosphate 2 oz.....	10
Gall nuts, 1 oz.....	“ sulphate, $\frac{1}{4}$ lb.....	10
Glucose, 5 oz.....	Strontium nitrate, 1 oz.....	10
Gypsum (crystallized), $\frac{1}{4}$ lb.....	Sulphur roll, $\frac{1}{4}$ lb.....	10
Iodine, $\frac{1}{2}$ oz. .... bottle, 5c. 15	Tartar emetic, $\frac{1}{4}$ lb.....	10
Iron filings, 2 oz.....	Tin, granulated, $\frac{1}{4}$ lb.....	10
Lead, 2 oz., granulated.....	Zinc, “ 1 lb.....	20
“ nitrate, 2 oz.....	“ sulphate, 1 oz.....	10
“ oxide, 1 oz.....		<u>\$7 25</u>

If several pieces of the apparatus in List No. 1 are taken, a discount of 10 per cent. will be made; on a complete set, 20 per cent. discount will be allowed; on three or more sets, 25 per cent.

One or more of the articles in List No. 2, if not marked “net” or “20 per cent.” will be supplied at 25 per cent. discount if ordered with sets of the apparatus in List No. 1.

A discount of 10 per cent. will be given on a complete set of the chemicals (List No. 3), and of 15 per cent. on three or more sets.

**8573. List of the most necessary Apparatus for Qualitative and Quantitative Analysis, as used by the School of Mines, compiled to be a help in making out orders.**

Flasks, 40 c.c., Bohemian.	Plain Beakers, No. 2, 125 c.c.	Convex Covers, 12 c.m.
" 100 c.c., "	Ditto, ditto, No. 3, 200 c.c.	Ditto, ditto, 14 c.m.
" 150 c.c., "	Ditto, ditto, No. 4, 300 c.c.	Ditto, ditto, 18.5 c.m.
" 250 c.c., "	Ditto, ditto, No. 5, 450 c.c.	Weighing Scoop.
" 400 c.c., "	Test Tubes, No. 1, 10 c.m.	Piece of Combustion Tube,
" 700 c.c., "	Ditto, ditto, No. 2, 15 c.m.	2 metres.
" 1000 c.c., "	Ditto, ditto, No. 3, 20 c.m.	Calcium Chloride Tube,
" 1400 c.c., "	Thistle Tube, 9 to 10 in. long.	small, bent.
Funnels, No. 1, 4 c.m., Bohemian.	Flat Covers.	Funnel Tube, stop-cock,
Funnels, No. 2, 7 c.m., Bohemian.	Piece of blue glass, 8 ctm. sq.	70 c.c.
Funnels, No. 3, 8 c.m., Bohemian.	Wash Bottle, No. 1, 150 c.c.	Ignition Bulb Tube.
Funnels, No. 4, 10 c.m., Bohemian.	Ditto, ditto, No. 2, 400 c.c.	Specimen Tubes, 8 c.m.
Funnels, No. 5, 13 c.m., Bohemian.	Ditto, ditto, No. 3, 700 c.c.	U Tubes, set of four.
Funnels, No. 6, 15 c.m., Bohemian.	Ditto, ditto, No. 4, 1400 c.c.	Ditto, No. 1, 14 c.m.
Funnels, No. 7, 18 c.m., Bohemian.	Flasks, 2 litres, Bohemian.	Ditto, No. 2, 15 c.m.
Funnels, No. 8, 21 c.m., Bohemian.	Ditto, 50 c.c., Ditto, measured.	Ditto, No. 3, 30 c.m.
Watch Glasses, flat, 5 c.m.	Flasks, 100 c.c., Bohemian, measured.	Pelilot Bulbs.
Glass Tube Metre.	Flasks, 200 c.c., Bohemian, measured.	Retort, ½ litre, tub.
Glass Rod "	Flasks, 250 c.c., Bohemian, measured.	Ditto, 1 litre, tub.
Bottles Corked, wide-mouthed 35 c.c.	Flasks, ½ litre, Bohemian, measured.	Ditto, 1½ litre, tub.
Ditto, ditto, ditto, 100 c.c.	Flasks, 1 litre, Bohemian, measured.	Ditto, 2 litre, tub.
Ditto, ditto, ditto, 150 c.c.	Flasks, Specific Gravity.	Ditto, 3 litre, tub.
Ditto, ditto, ditto, 250 c.c.	Flasks, parting, 150 c.c., straight neck.	Ditto, 3½ litre, tub.
Ditto, ditto, for alcohol, 600 c.c.	Flasks, 70 c.c., wide-mouthed.	Measuring Cylinder, 1 to 10 c.c.
Bottles, glass stoppered, narrow mouth, 15 c.c.	Ditto, Erlenmeyer, 400 c.c.	Lipped Beakers, nests of 6.
Ditto, ditto, ditto, 30 c.c.	Ditto, ditto, 250 c.c.	Lipped Beakers, No. 1, 150 c.c.
Ditto, ditto, ditto, 250 c.c.	Pipettes, 10 c.c.	Ditto, ditto, No. 2, 250 c.c.
Plain Beakers, nests of five, (Nos. 1 to 5).	Ditto, 25 c.c.	Ditto, ditto, No. 3, 350 c.c.
Ditto, ditto, No. 1, 75 c.c.	Ditto, 50 c.c.	Ditto, ditto, No. 4, 500 c.c.
	Ditto, 100 c.c.	Ditto, ditto, No. 5, 700 c.c.
	Burette, Gay Lussac, 50 c.c., in tenths.	Ditto, ditto, No. 6, 1000 c.c.
	Convex Covers, 8 c.m.	Desiccators, covered.
	Ditto, ditto, 9 c.m.	Glass Mortar and pestle.
		Thermometer.
		U Tubes, with side tubes.
		Liebig's Potash Bulb.
		Bulbed Calcium Chloride Tube.
		Glass Bulbs, Dumas Vapor.

### PORCELAIN.

Porcelain Mortar and pestle, 12 c.m.	Porcelain Evap. Dishes, No 5.	Porcelain Casseroles, Berlin, 11 ctm.
Porcelain Evap. Dishes, nest of six.	Ditto, ditto, No. 6.	Ditto, ditto, 18.5 ctm.
Ditto, ditto, No. 1.	Ditto, ditto, 19 c.m.	Ditto, ditto, 16.5 ctm.
Ditto, ditto, No. 2.	Ditto, ditto, 21 c.m.	Porcelain Crucibles, Royal Berlin, 32 m.m.
Ditto, ditto, No. 3.	Porcelain Evaporating Dishes, 23.5 c.m.	Ditto, ditto, 44 m.m.
Ditto, ditto, No. 4.	Ditto, ditto, 31.5 c.m.	Ditto, ditto, 51 m.m.
	Ditto, ditto, 9.5 ctm.	

### PAPER.

Package Cut Filters, 8 c.m.	Package Cut Filters, 23 c.m.	Sheets German Paper, 8. 4
Ditto, ditto, 10 c.m.	Ditto, ditto, 26 c.m.	Sheets Glazed Paper.
Ditto, ditto, 13 c.m.	Ditto, ditto, 30 c.m.	Note Book.
Ditto, ditto, 15 c.m.	Sheets Swedish Paper, M, No. 1.	Box of gum tickets.
Ditto, ditto, 18 c.m.		

## METAL.

Filtering Stands, 3 rings.  
 File Triangular, 12 c.m.  
 File Rat-tail, 12 c.m.  
 Steel Forceps, 11 c.m.  
 Steel Forceps, bent, nickel plated.  
 Wire Triangles.  
 Ditto, ditto, covered.  
 Scissors, Rogers, 10 c.m.  
 Pieces, Wire Gauze, 10 c.c.

Bunsen Burners.  
 Ditto, ditto, with side flame.  
 Wing-top for ditto.  
 Lead Capsule.  
 Water Baths, 14 c.m.  
 Watch Glass Clip.  
 Sand Baths, tin, 15 c.m.  
 Set of four zinc Filter Patterns,  
 Platinum Foils, 8 c.m.  
 Ditto, Capsule.

Platinum Foils, wire, fine,  
 60 c.m.  
 Ditto, triangle.  
 Ditto, Crucible.  
 Ditto, Dish.  
 Gas Stove, Dome.  
 Gas Stove, Fletcher's.  
 Gas Stove, Ring.  
 Tube Clamp.  
 Riders for Balance.  
 Blow-pipe.

## SUNDRIES.

Filter Stands, Folding.  
 Ditto, ditto, Fresenius.  
 Test Tube Racks.  
 Test Tube Holder.  
 Rubber Tube, black, 4 m.m.  
 Rubber Tube, 5 m.m.  
 Rubber Tube, white, 7 m.m.,  
 extra heavy.

Rubber Stopper, with holes,  
 Nos. 1 to 6.  
 Rubber Stopper, with holes,  
 large.  
 Sponge Swabs, whalebone.  
 Horn Spatula, 13 c.m.  
 Towels.  
 Test Tube Brushes, sponge-  
 end.

Tube Cleaners.  
 Clay Chimneys.  
 10 c.c. Platinum Chloride.  
 Bottle for same.  
 Argentic Nitrate, crystals.  
 Bottle for same.  
 Re-agent Bottles on laboratory  
 desk.

## ASSAY (SPECIAL.)

Re-agent Bottles in assay  
 Laboratory.  
 Filtering stand.  
 Filter stand, Fresenius.  
 Corvex Covers, 9 c.m.  
 Parting Bottles, 250 c.m.  
 Parting Flasks, 150 c.c., conical.  
 Funnel, No. 2, 7 c.m.  
 Set of 6 lipped Beakers.  
 Glass Rod.  
 Wash bottle, No. 2, 400 c.c.  
 Bottles, corked, wide-mouthed, 150 c.c.  
 Bottles, corked, wide-mouthed, 250 c.c.  
 Porcelain Capsules, 5 c.m.  
 Porcelain Mortars, 21 c.m.  
 Box of Gum Tickers.  
 Sheets of Glazed Paper.  
 Roasting Pans.  
 Iron Tray, 22x30 c.m.

Iron Mortar, 17 c.m.  
 Steel Forceps, bent, nickel plated.  
 Bunsen Burner.  
 Rubber Tube for same.  
 Towel.  
 Sand bath.  
 Package Cut Filter, 10 c.m.  
 Pure Silver, 15 grms.  
 Horn Spatula, 20 c.m.  
 Horn spoon, 23 c.m.  
 Hand Scales, with horn pans.  
 Flat Brush, 33 c.m. wide.  
 Annealing Cups.  
 Scorifiers, 8 c.m.  
 Roasting Dishes, 7 c.m.  
 Roasting Dishes, 8 c.m.  
 French Crucibles, No. 5.  
 French Crucibles, No. 6.  
 French Crucibles, No. 8.  
 French Crucibles, Covers,  
 No. 5.

French Crucibles, Covers,  
 No. 6.  
 French Crucibles, Covers,  
 No. 8.  
 Hessian Crucibles, single,  
 fives.  
 Hessian Crucibles, nests,  
 sixes.  
 Hessian Crucibles, nests,  
 eights.  
 Hessian Crucibles, Covers,  
 fives.  
 Hessian Crucibles, Covers,  
 sixes.  
 Hessian Crucibles, Covers,  
 eights.  
 Lead Assay Crucibles.  
 Lead Assay Covers.  
 Assay Balance.  
 Set of Weights with Forceps.

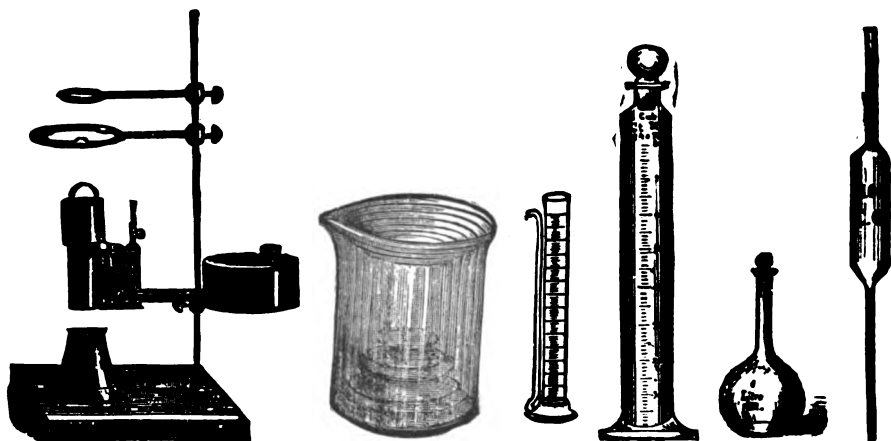
- 8574. Set of Apparatus Qualitative Analysis, according to Prof. Fresenius. Price .....\$26 00

No.  
 1.-1 Berzelius Lamp, or  
 Bunsen's Gas Lamp.  
 2.-1 Glass Alcohol Lamp.  
 3.-1 Berzelius Blow-pipe.  
 4.-1 Platinum Tip.  
 5.-1 Plat'm Crucible 10 c.c.  
 6.-1 Nest Berlin Crucibles,  
 of 4.  
 7.-1 Nest Berlin Dishes, of 5.  
 8.-3 Glass Funnels, ground  
 top.

No.  
 9.-1 lb. Glass Tubing.  
 10.-Platinum Foil.  
 11.-Platinum Wire.  
 12.-Test Tube Stand.  
 13.-13 German Test Tubes.  
 14.-1 Nest (5) Bohemian  
 Beakers.  
 15.-4 Flasks, 2, 4, 8 and 16  
 ounces.  
 16.-1 pint Washing Bottle.

No.  
 17.-1 Agate Mortar and Pestle.  
 18.-1 Pair Forceps, platina  
 tips.  
 19.-1 Filtering Stand.  
 20.-1 Triangle.  
 21.-1 Iron Tripod.  
 22.-1 pair Steel Crucible  
 Tongs.  
 23.- German Filtering Paper.

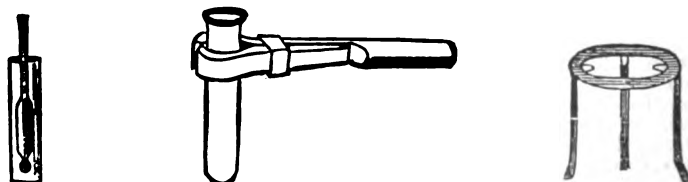
## —8575. Set of Apparatus for volumetric Analysis..... \$40 00



- |  |  |   |
|--|--|---|
| <p>No.</p> <p>1.—1 Mohr's Burette, 100 CC in 1-5 CC.</p> <p>2.—1 Mohr's Burette, 50 CC in 1-10 CC.</p> <p>3.—1 Gay Lussac's Burette, 50 in 1-10 CC on polished wooden base.</p> <p>4.—1 Mohr's Burette, 25 CC in 1-10 CC.</p> <p>5.—1 Mohr's Burette, 50 CC in 1-10 CC, with glass stop-cock.</p> <p>6.—1 Bink's Burette, 100 CC or smaller, on polished wooden base.</p> <p>7.—4 Floats to fit above Burettes.</p> <p>8.—1 Wooden Support for two Burettes.</p> <p>9.—1 Iron Support, with brass clamps, for two Burettes.</p> <p>10.—1 Graduated Mohr's Pipette, 100 CC in 1-5 CC.</p> | <p>No.</p> <p>11.—1 Graduated Mohr's Pipette, 50 CC in 1-10 CC.</p> <p>12.—1 Graduated Mohr's Pipette, 10 CC in 1-20 CC.</p> <p>13.—1 Graduated Mohr's Pipette, 5 CC in 1-20 CC.</p> <p>14.—2 Volume Pipettes.</p> <p>15.—1 Fixed Pipette, 20 CC.</p> <p>16.—Ditto, ditto, 25 CC.</p> <p>17.—Ditto, ditto, 50 CC.</p> <p>18.—Ditto, ditto, 100 CC.</p> <p>19.—4 Mohr's Pinch-cocks, with tips and rubber.</p> <p>20.—1 Graduated Glass Cylinder, with lip, 50 CC.</p> <p>21.—1 Graduated Glass Cylinder, with lip, 250 CC.</p> <p>22.—1 Graduated Glass Cylinder, with lip, 500 CC.</p> <p>23.—1 Graduated Glass Cylinder, with lip, 1000 CC.</p> <p>24.—1 Mixing Jar, glass-stoppered, 1000 CC.</p> | <p>No.</p> <p>25.—1 Mixing Flask, glass-stoppered, 1000 CC.</p> <p>26.—1 Volumetric Flask, with mark, 100 CC.</p> <p>27.—1 Volumetric Flask, with mark, 250 CC.</p> <p>28.—1 Volumetric Flask, with mark, 500 CC.</p> <p>29.—1 Porcelain Plate.</p> <p>30.—1 Set (6) Bohemian Beakers, lipped.</p> <p>31.—1 Set (4) Bohemian Beakers, not lipped.</p> <p>32.—1 Glass Alcohol Lamp.</p> <p>33.—6 Test Glasses.</p> <p>34.—1 dozen Stirring Rods.</p> <p>35.—Six Glass Funnels, 1 to 4 inch diameter.</p> <p>36.—Glass Tubing.</p> <p>37.—1 doz. sheets each, blue and red Litmus paper.</p> <p>38.—1 dozen sheets turmeric paper.</p> <p>39.—Chemical pure filtering paper, Swedish.</p> <p>40.—1 Set of Liter Bottles for Standard Solutions.</p> |
|--|--|---|

## 8576. Set of Apparatus to perform all the experiments in Dr. Piffard's, "A Guide to Urinary Analysis" at prices quoted there in appendix.....\$86 00

Prof. Draper, set of Urinary Apparatus, (see Apparatus.)



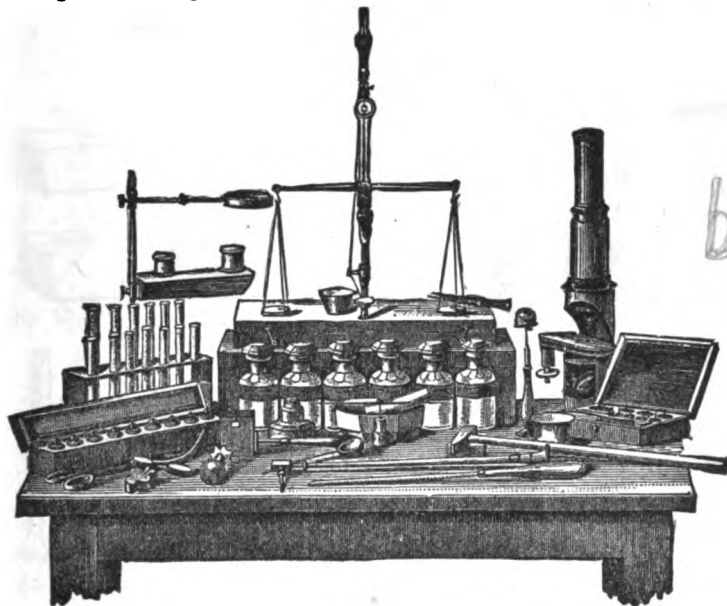
## 8577. Set of Urinary Analysis, according to Dr. A. Flint, all arranged in a polished black walnut case, for travelling or physician's office, complete..\$20 00



## BLOW-PIPE.

- 8578. Blow-pipe Cabinet, according to Professor Plattner, of Lingke's (Freiberg), superior make, complete with gilded, agate knife edge, assay, and specific gravity balance, in folding glass case, comprising every article used in qualitative and quantitative Blow-piping.

The apparatus is laid in trays, fitted in polished mahogany cases, contained in a very substantial strapped leather case 12x12x13 inch, with handles. It bears the roughest handling or road transportation, complete, net.....\$175 00

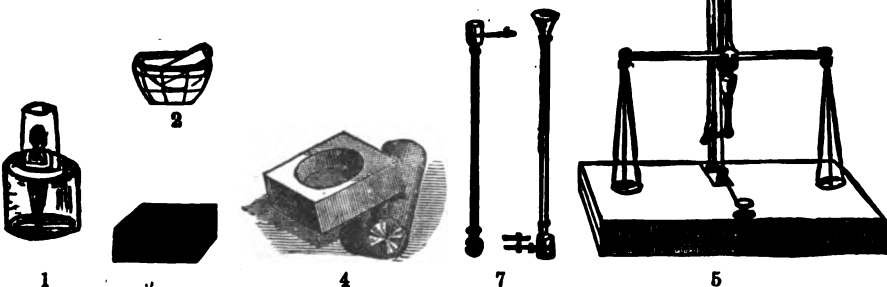


8579

- 8579. Apparatus for Qualitative and Quantitative Blow-piping according to Prof. Plattner. same as in set mentioned before singly.

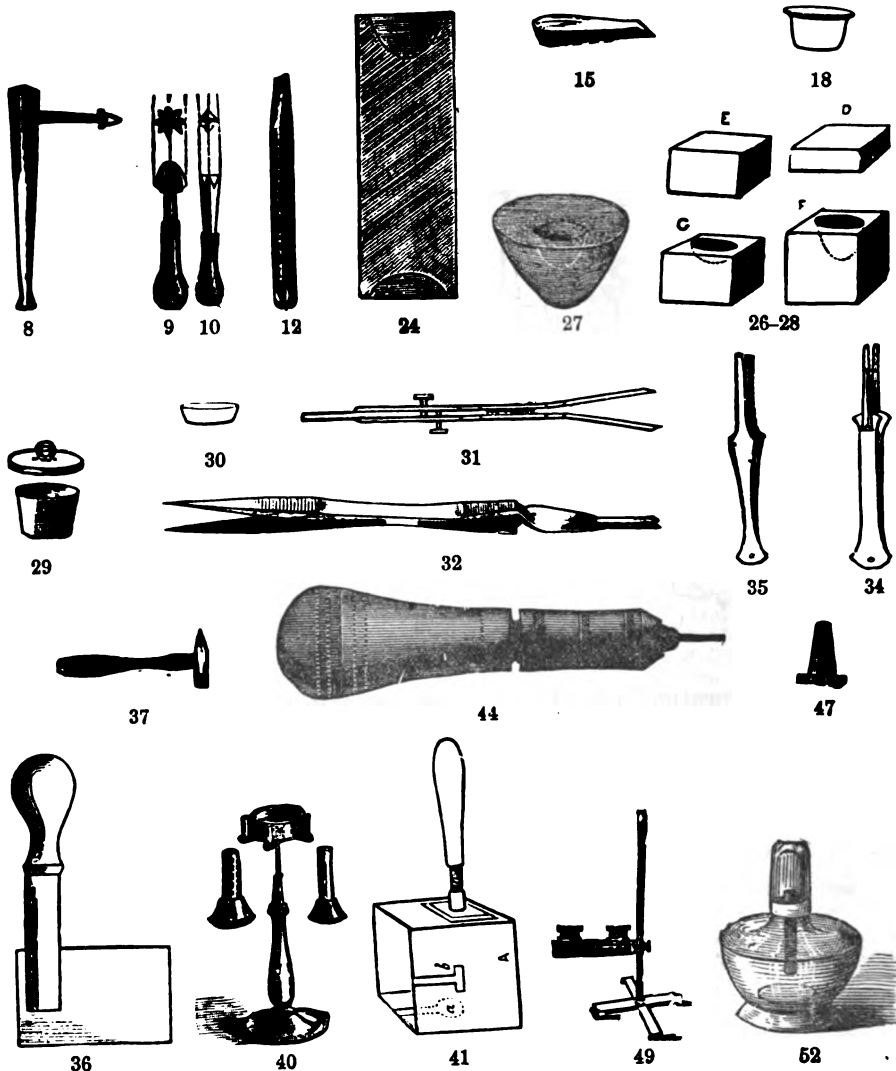
No.

- 1.—Acid and Cobalt Bottle.....30 to 40 cts.
- 2.—Agate Mortar and Pestle, 2 inch diameter....\$1 85
- 3.—Anvil, of best steel.....50 cts.
- 4.—Anvil and Mortar combin'd, Prof. Leed's form \$2 00



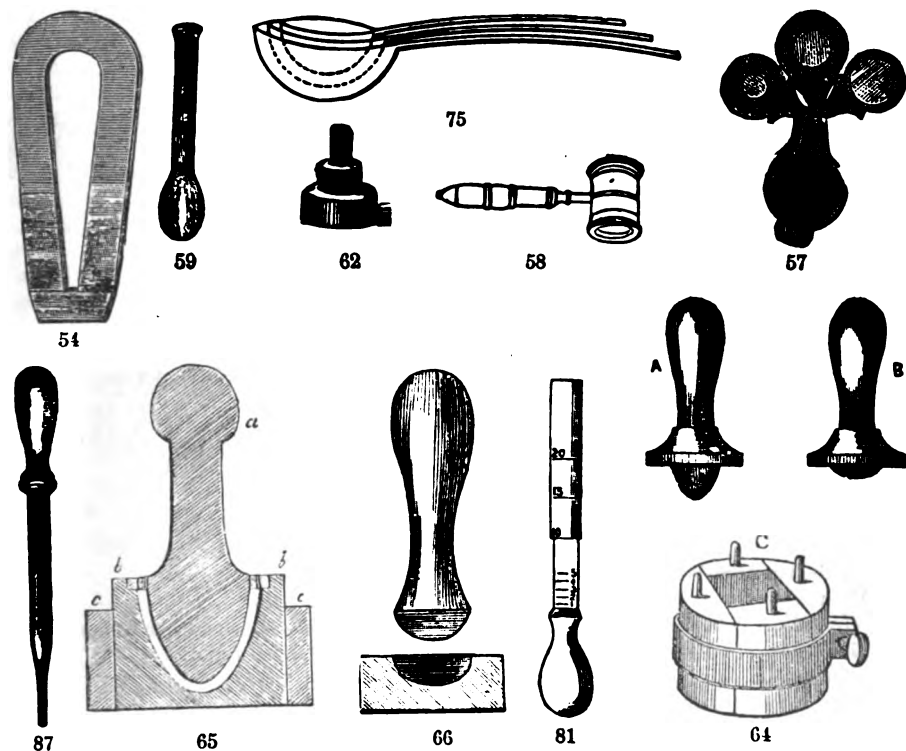
- 5.—Balance, Plattner's in polished case.....20 00
- 6.—Ditto, ditto, with weights.....23 00

7.—Blow-pipe, Plattner's, with platinum jet. Plain....	\$2 50.	Nickel plated.....	2 50
8.—Ditto, ditto, common.....			20 to 40 cts.
9.—Borer, Charcoal, club shape.....			75 cts.
10.—Ditto, ditto, four cornered.....			45 cts.
11.—Ditto, ditto, with spatula.....			50 cts.
12.—Ditto, ditto, chisel and magnet combined.....			50 cts.
13.—Brush, assay button.....			45 cts.
14.—Ditto, mixing, camel hair.....			5 cts.
15.—Capsule, mixing, brass.....			20 cts.
16.—Ditto, ditto, nickel plated.....			25 cts.
17.—Ditto, ditto, horn.....			15 cts.
18.—Ditto, porcelain, deep, each.....			20 cts.



19.—Charcoal Saw.....	30 cts.
20.—Charcoal, natural, per doz.....	50 cts.
21.—Ditto, 3x½ inch, artificial.....	5 1 cts.
22.—Clay Capsules, per dozen.....	20 cts.
23.—Clay Crucibles, per doz n.....	20 cts.
24.—Clay Cylinders, each.....	24 cts.
25.—Coal Capsules, per dozen.....	18 cts.
26.—Coal Covers, square, per dozen.....	10 cts.

27.—Coal Crucibles, per dozen.....	20 cts.
28.—Coal Squares, per dozen.....	75 cts.
29.—Crucibles, Plattner's.....	25 cts.
30.—Dishes, porcelain, 3 in nest.....	24 cts.
31.—Forceps, platinum pointed, Plattner's style, nickel plated.....	\$3 00
32.—Forceps, platinum pointed, steel, nickel plated, French style.....	3 00
33.—Forceps, brass.....	40 cts.
34.—Forceps, nickel plated, extra long tips.....	75 cts.
35.—Forceps, steel, for lamp.....	20 cts.
36.—Form for Paper Cylinders.....	15 cts.
37.—Hammer, Plattner's style.....	60 cts.
38.—Hammer, wire handle, Colton's style.....	75 cts.
39.—Hammer, for chipping minerals.....	\$1 00 to 2 00
Other Hammers, see Catalogue.	
40.—Holder, cupel, with two cupels and one mould.....	\$1 45
41.—Ditto, charcoal, with platinum ring, shield and stand.....	2 20
42.—Ditto, for evaporating dish, with triangle.....	2 00



43.—Ditto, for chimney.....	1 50
44.—Ditto, for platinum wire.....	80 cts.
45.—Ditto, ditto, with 6 wires.....	\$1 50
46.—Ditto, for mattress.....	30 cts.
47.—Jets, platinum, without seam.....	75 cts.
48.—Knife.....	25 cts.
49.—Lamps, for blow-pipe, with patent swivel, nickel plated.....	\$1 25
50.—Lamps, for blow-pipe, plain brass.....	3 50
51.—Lamps, alcohol, brass cover, plated.....	70 cts.
52.—Lamps, ditto, plain.....	45 cts.
53.—Magnet, bar and chisel edge.....	34 cts.
54.—Ditto, horse-shoe.....	25 cts.
55.—Magnifier, with one lens.....	40 cts.
56.—Magnifier, with 2 lenses.....	50 cts.
57.—Magnifier, with 3 lenses.....	60 cts.
58.—Magnifier, with handle.....	\$1 50 to \$2 50
59.—Mattresses, extra hard Bohemian glass, with bulb, per dozen.....	75 cts.
60.—Ditto, closed tube only, per dozen.....	24 cts.
61.—Mattresses, German glass, flask shape, per dozen.....	30 cts.

62.—Mortar, Plattner's diamond.....	\$3 75
63.—Ditto, according to Prof. Leeds (see figure 4).....	2 00
64.—Moulds, for square coals and covers with two stamps.....	4 50
65.—Moulds, brass, for clay crucibles.....	4 00
66.—Moulds and stamp, of hard wood, for making coal crucibles.....	50 cts.
67.—Moulds and stamp, for making coal capsules.....	50 cts.
68.—Nippers, flat nose.....	50 cts.
○ 69.—Plat. Wire, per foot.....	50 to 75 cts.
○ 70.—Plat. Foil, per square inch.....	50 to 75 cts.
71.—Pliers, cutting, Plattner's.....	from \$1 00 to 1 50
72.—Soda papers, box.....	20 cts.
73.—Spatula, mixing, steel.....	25 cts.
74.—Spoon, ivory.....	24 cts.
75.—Spoon, platinum.....	\$1 00 to 2 50
76.—Scale, Plattner's, for measuring silver buttons, of ivory.....	3 00
77.—Scissors, for lamp.....	50 cts.
78.—Streak plate.....	20 cts.
79.—Supports for Crucibles, metallic, for two.....	20 cts.
80.—Supports for Crucibles, clay.....	24 cts.
81.—Test Lead Measure.....	50 cts.
82.—Test Lead Sieve.....	\$1 00
83.—Tips of Platinum for Blow-pipe.....	75 cts.
84.—Tray, for coal.....	45 cts.
85.—Tray, for dirt.....	35 cts.
86.—Tubes, of hard glass, per dozen.....	30 cts.
87.—Tube, dropping, for cobalt solution.....	10 cts.
88.—Watchglasses, two inch, per dozen.....	25 cts.
89.—Wick.....	10 cts.
90.—Re-agent Bottles, Bohemian, glass stoppered, flat tops, with labels, per doz....	\$2 00
91.—Ditto, cork stoppered, 18 bottles set in wooden block.....	1 50

### 8580. List of Blow-pipe Re-agents.

No.	No
1.—Carbonate of Soda, pure and dry.	14.—Gold, foil.
2.—Neutral Oxalate of Potassium, pulverized.	15.—Arsenic, metallic.
3.—Cyanide of Potassium, “	16.—Test Papers, blue and red litmus.
4.—Iodide of “ “	17.—Salt, pulverized and dry.
5.—Borax and Borax Glass, “	18.—Fluorspar, fine and dry.
6.—Salt of Phosphorus (phosphate of soda and ammonia.)	19.—Silica, ignited and white.
7.—Nitric (crystals).	20.—Oxide of Copper.
8.—Bi-sulphate of Potassium.	21.—Chloride of Silver
9.—Vitrified Boracic Acid in small fragments.	22.—Starch Meal.
10.—Nitrate of cobalt in solution.	23.—Graphite, fine and pure.
11.—Test Lead, finely granulated.	24.—Concentrated Sulphuric, Nitric, and Mariatic Acid.
12.—Tin, in foil, best	25.—Acetic Acid.
13.—Iron, wire or pieces of $\frac{1}{2}$ inch to 1 inch long.	26.—Carbonate of Ammonia in powder
	27.—Charcoal cut in blocks.
	28.—Sifted and washed bone-ash.

Frame for 18 re-agents.....	60
Ditto, ditto, with 18 labeled bottles.....	\$1 50
Ditto, ditto, filling of above, the 18 most necessary ones.....	2 00

8581. **Apparatus for Blow-piping**, according to **Prof. Plattner**, as used in Columbia College, the whole in elegant velvet lined, polished, mahogany case, with handle and lock, for traveling, complete with case.....\$38 00

**The set includes:**

No.	No.	No.
1.—1 set of 3 Porcelain dishes.	16.—1 heavy Platinum Tip	30.—Test Lead.
2.—1 Diamond Steel Mortar.	for same.	31.—Tin.
3.—1 pair Platinum Pointed Forceps	17.—1 Steel Hammer with wire handle	32.—Phosphorus Salt.
4.—1 pair heavy Tip Steel Forceps.	18.—1 Set Mould and Stamps.	33.—Borax Powder.
5.—1 pair Steel Forceps.	19.—1 pair of Steel Nippers, Plattner's.	34.—Borax Glass.
6.—1 Steel Chisel.	20.—1 Double Lense.	35.—Boracic Acid fused.
7.—1 Charcoal Borer, 4 cornered, with Spatula.	21.—Ivory Spoon.	36.—Plattner's Flux.
8.—1 Charcoal Borer, club shape.	22.—12 Matrasses.	37.—Bismuth Flux.
9.—1 pair Fine Scissors.	23.—1 Alcohol Lamp, with nickel plated air tight top.	38.—Boracic Acid.
10.—1 Wire Holder, with	24.—1 Chamois Skin.	39.—Carbonate Soda.
11.—5 Platina Wires in the handle.	25.—6 Glass Tubes.	40.—Salt.
12.—1 Plattner's Blow-pipe Lamp, with patent swivel, nickel plated.	26.—6 pieces square cut Charcoal.	41.—Soda.
13.—1 Charcoal Saw.	27.—Metal Tray, for coal.	42.—Soda Nitrate
14.—1 Holder for the Matrasses.	28.—Metal Tray, for ashes.	43.—Charcoal.
15.—1 Nickel Plated Plattner's Blow-pipe.	29.—18 Flat top stoppered and labeled Re-agent Bottles, containing the following Re-agents.	44.—Boneash sieved.
		45.—Boneash washed.
		46.—Copper Oxide.
		47.—Bisulphate Potash.
		48.—1 Camel-Hair Brush.
		49.—Dropping Pipette.
		50.—1 Frame for the Re-agent Bottles.
		51.—Test Papers.
		52.— $\frac{1}{2}$ doz. Watch Glasses.
		53.—Mixing Scoop.



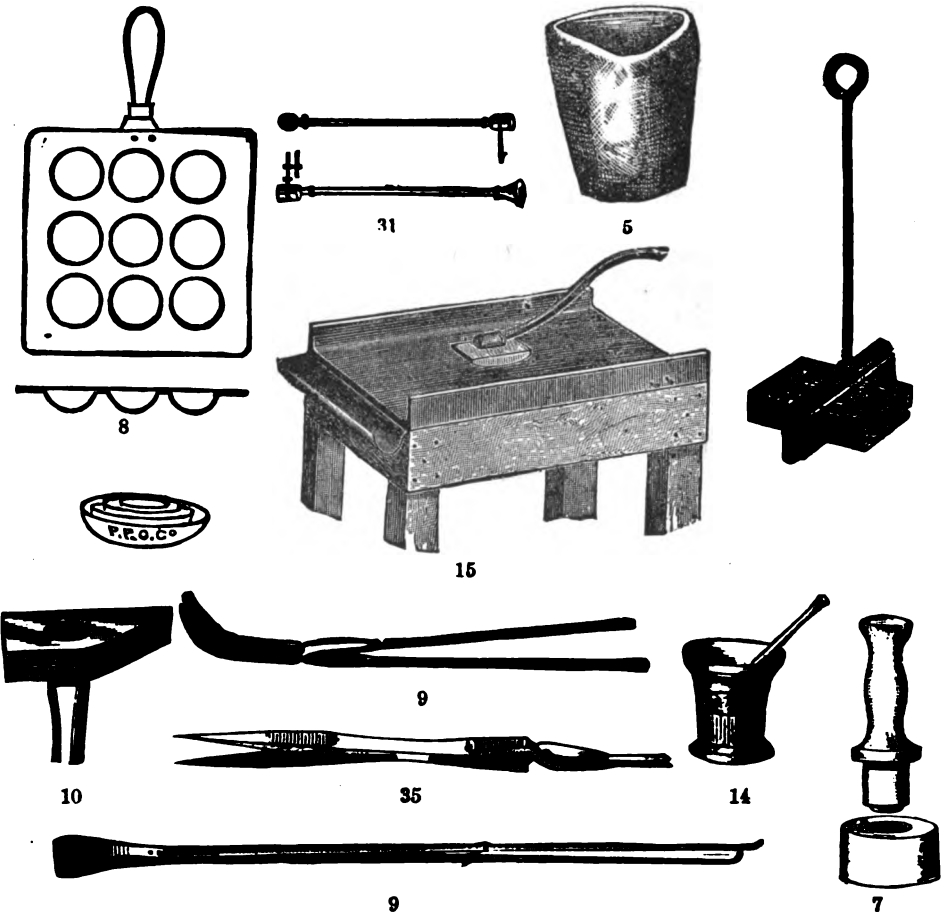
## ASSAYING.

— 8582. **ASSAYER'S OUTFIT**, including the most necessary articles, in quantities large enough to do considerable work. Total cost of outfit as per list below the Balances and Weights included.

Price .....\$228 00

Ditto, ditto, without the Balances and Weights (see also page 45)..... 105 00

- 1.—Ore Balance.....\$15 00 to 20 00
- 2.—Button Balance..... 65 00
- 3.—Weights, Assay, Ton and Gramme..... 16 00
- 4.—Muffles,  $\frac{1}{2}$  dozen at 75 cents each, according to furnace.....4 50 to 12 00
- 5.—Hessian Crucibles, 50 nests, small fives..... 2 50
- 6.—Scorifiers, 500 at 2 cents each..... 10 00
- 7.—Cupel Mould..... 2 50



- 8.—Scorification Moulds..... 95
- 9.—Crucible, Scorification and Cupel Tongs..... 3 00 to 4 00
- 10.—Hammers..... 1 00 to 1 50
- 11.—Pokers and Scrapers..... 1 00
- 12.—Cutting Hammers, Vise and Anvil..... 5 00

13.—Files, Chisels, Saw, Hatchet, etc.	\$ 2 50
14.—Iron Mortars, large and small	3 25
15.—Plate and Rubber	12 00
16.—Box Sieve	2 00
17.—Tin Sampler	75
18.—Sieves, wood frames, 80 mesh	1 40
19.—Mixing Scoop	35
20.—Re-agent Bottles, glass stoppered, set of 40 $\frac{1}{4}$ pints	5 83
21.—Parting Bottles	90
22.—Bottles for Samples, corked, dozen	1 20
23.—Ring Stands and Alcohol Lamps	1 20
24.—Wash Bottles, two, one large, one small	90
25.—Horn Spatulas, Spoon, etc.	75
26.—Parting Flasks, Annealing Cups, etc.	1 50
27.—Porcelain Mortar	1 00
28.—Glass Rods, Tubes, Funnels, Beakers, etc.	2 50
29.—Note Book, Towels, Brushes, etc.	1 50
30.—Extra Apparatus, such as Iron Pan for mechanical assay, Pipettes, etc.	4 00
31.—Blow-pipe, Blow-pipe Lamp, etc.	6 50
32.—Hammer and Anvil, small	1 30
33.—Button Brush	50
34.—Scissors, Knife, Magnifier and Magnet	2 20
35.—Two Forceps and Tongs, steel	1 75
36.—Test Tubes and Stand	1 00
37.—Filter Papers, Test Papers, etc.	1 00
38.—Platinum Wire, Foil, etc.	2 00
39.—Set of heavy Scales with Weights	8 00
40.—Bone-ash for making Cupels	4 00
41.—Litharge	1 00
42.—Soda, Borax, etc.	1 50
43.—Test Lead	5 00
44.—Nitre, Arrol, Potassium Cyanide	4 00
45.—Nitric, Muratic and Sulphuric Acids, common and chemically pure	6 00
46.—Extra Re-agents, etc., to fill set No. 20.	6 00

For Furnaces, (see list of Furnaces.) pages 138-48.

Other Apparatus to make an Assay Laboratory complete.

### GLASS.

Wash Bottles.	Glass Tubing.	Retorts.
Funnels.	" Rods.	Measuring Cylinders.
Watch Glasses.	Calcium Chloride Tubes.	Lipped Beakers.
Convex Covers.	Funnel Tube.	Plain Beakers.
Flat Covers.	" " with stop-cock.	Flasks, measured.
Piece Blue Glass.	Drying Tubes.	" Specific Gravity.
Desiccators, covered.	Ignition Bulb Tube.	" Parting.
Bottles, corked.	U Tubes.	Pipettes,
" glass stoppered.	Test Tubes.	Burettes.
	Specimen Tubes.	

### PORCELAIN.

Porcelain Mortars, 4 $\frac{1}{2}$ in.	Porcelain Evap. Dishes, 12 in.	Porcelain Casseroles, 5 $\frac{1}{2}$ in.
" " 5 "	" Casseroles, 3 $\frac{1}{2}$ in.	" Crucibles, 1 $\frac{1}{2}$ in.
" " Ex. Pestle for	" " 4 in.	" " 1 $\frac{1}{2}$ in.
" Evap. Dishes, nest	" " 4 $\frac{1}{2}$ in.	" " 2 in.
of 6.	" " 5 in.	

## PAPER.

Packages Cut Filters, 3 in.  
 " " 3½ in.  
 " " 4 in.  
 " " 4½ in.  
 " " 5 in.

Packages Cut Filters, 5½ in.  
 " " 6 in.  
 " " 7 in.  
 " " 8 in.

Packages Cut Filters, 9 in.  
 Sheets Swedish Paper.  
 " Glazed Paper.  
 Note Books.

## METAL.

Ring Stands.  
 Files, triangular.  
 Weights, Scales.  
 Steel Forceps.  
 " " (bent.)  
 Wire Triangles.  
 " " (covered),  
 2 inches.

Wire Triangles (covered),  
 3 inches.  
 Scissors.  
 Pieces Wire Gauze.  
 Bunsen's Burners.  
 Water Baths.  
 Watch Glass Clips.  
 Sand Baths.

Set Filter Patterns.  
 Platinum Foils, 1½ in.  
 " " 3 in.  
 " Wire, 10 feet.  
 Platinum Crucible, ½ oz.  
 Gas Stoves.  
 Blow-pipes.  
 Clamps.

## SUNDRIES.

Filter Stands.  
 Test Tube Racks.  
 Rubber Tubing, black, ½ in.  
 " " white, ½ in.  
 " " ¾ in.

Rubber Corks.  
 Sponge Probangs.  
 Horn Spatulas, 4 in.  
 " " 5 in.

Horn Spatulas, 6 in.  
 Towels.  
 Test Tube Brushes.  
 Clay Chimneys.

## RE-AGENTS.

Hydrochloric Acid, .  
 (concent.)  
 Hydrochloric Acid, (dilute.)  
 Nitric Acid, (concent.)  
 Nitric Acid, (dilute.)  
 Sulphuric Acid, (concent.)  
 Sulphuric Acid, (dilute.)  
 Hydrosulphuric Acid.  
 Potassic Hydrate.  
 Sodie Carbonate.  
 Ammonic Hydrate.  
 Ammonic Carbonate.  
 Ammonic Chloride.  
 Ammonic Sulphide.  
 Ammonic Oxalate.  
 Baric Chloride.

Hydro-Di-Sodie Phosphate.  
 Potassic Ferrocyanide.  
 Potassic Ferricyanide.  
 Ferric Chloride.  
 Acetic Acid.  
 Calcic Sulphate.  
 Mercuric Chloride.  
 Stannous Chloride.  
 Sodie Acetate.  
 Ammonic Sulphate.  
 Potassic Dichromate.  
 Magnesic Sulphate.  
 Lime Water.  
 Calcic Chloride.  
 Plumbic Acetate.  
 Indigo Solution.  
 Argentic Nitrate.

Platinic Chloride.  
 Ammonic Molybdate.  
 Ammonic Sulphocyanide.  
 Baric Carbonate.  
 Sodie Carbonate, (dry.)  
 Borax, (crystallized.)  
 Phosphorus Salt, (crystal-  
 lized.)  
 Sodie Nitrate, (crystals.)  
 Potassic Cyanide, (powder.)  
 Cobaltic Nitrate.  
 Ferrous Sulphate, (crystals.)  
 Test Papers, (blue, red and  
 yellow.)  
 Common Sulphuric Acid.  
 Common Hydrochloric Acid.

## EXTRA RE-AGENTS.

Alcohol, (absolute.)  
 Alcohol, (common.)  
 Ammonic Fluoride.  
 Arsenic, (metallic.)  
 Battery Acid, (dilute.)  
 Battery Fluid.  
 Benzol, (pure.)  
 Benzol, (common.)  
 Bromine Water.  
 Chlorine Water.

Chloroform.  
 Distilled Water.  
 Iron, wire and plate.  
 Lead, bar and foil.  
 Mercury.  
 Nitro-Hydrochloric Acid,  
 (aqua regia.)  
 Oxalic Acid, (crystals.)  
 Potassic Iodide, (crystals.)  
 Potassic Carbonate, (dry.)

Potassic Nitrate.  
 Potassic Nitrite.  
 Potassic Chlorate.  
 Potassic Permanganate,  
 (crystals.)  
 Silver, foil.  
 Sodie Acetate, (crystals.)  
 Sulphur, roll.  
 Sulphur, flowers.  
 Zinc, bar and sheet.



— 8583. **Apparatus and Chemicals necessary for steel analysis, according to Blair and Troilius, in quantities sufficient for considerable work. All Chemicals strictly c. p.**

Acid acetic, 5 lbs.	Ditto, chlorate, 5 lbs.
Ditto, chromic, 1 lb.	Potassium cyanide-ferro, $\frac{1}{2}$ lb.
Ditto, hydrochloric, 30 lbs.	Ditto, cyanide-ferri, $\frac{1}{2}$ lb.
Ditto, hydrofluoric, $\frac{1}{2}$ lb.	Ditto, hydrate by alcohol, 2 lbs.
Ditto, molybdic, 3 lbs.	Ditto, permanganate, 1 lb.
Ditto, nitric, 49 lbs.	Pumice stone, 1 lb.
Ditto, oxalic, $\frac{1}{2}$ lb.	Silver nitrate, $\frac{1}{2}$ ounce.
Ditto, sulphuric, 18 lbs.	Sodium acetate, 1 lb.
Alcohol, pint.	Ditto, carbonate, dry c. p. 2 lbs.
Ammonium chloride, 2 lbs.	Ditto, thiosulphate, 2 lbs.
Ditto, hydrate, 28 lbs.	Zinc metallic, c. p. $\frac{1}{2}$ lb. 2 lbs. common.
Ditto, oxalate, $\frac{1}{2}$ lb.	Wax, Bees, $\frac{1}{2}$ lb.
Ditto, carbonate, $\frac{1}{2}$ lb.	Ditto, sealing, $\frac{1}{2}$ lb.
Asbestos, 2 lbs.	1 Balance, analytical, to weigh up to 100 grms. and sensible to 1-20 milligram.
Barium carbonate, $\frac{1}{2}$ lb.	1 Balance, Robervahl, No. 3.
Ditto, chloride, 1 lb.	1 set weights, 50 grms. and down to 1 milligram, with 3 riders.
Bromine, 1 lb.	1 set weights, 1 kilo to 1 gramme.
Calcium chloride, (dry) 2 lbs.	Beaker's, Griffin's, wide form, lipped, 1-6; 12 nests.
Copper and Ammonic chloride, 10 lbs.	Beaker's, Griffin's, wide form, lipped, 1-3; 12 nests.
Ditto, sulphate (common), 5 lbs.	Beaker's, conical, Bohemian glass, $\frac{1}{2}$ litre capacity, 12.
Iron sesquichloride, 1 lb.	Bellows, Fletcher's new pattern, No. (9a) foot blower.
Ditto, protosulphate, 5 lbs.	Blast Lamp, Bunsen, No. 5.
Ditto, protosulphate and ammen., 1 lb.	Burners, Fletcher's, solid flame, No. 47, large size, 3.
Ditto, sulphide, 2 lbs.	Burners, Finckner's improved form, 6.
Iodine, 1 ounce.	Bottles, reagent, 1 pint, glass stoppered, 1 dozen.
Magnesium chloride, 1 lb.	Bottles, reagent, 1 quart, glass stoppered, 1 dozen.
Mercury, 1 lb.	Bottles, common, wide mouth for drillings, 2 ozs, 4 gross.
Microcosmic salt, $\frac{1}{2}$ lb.	Bottles, Woulff's, 2 necked, pt, 4.
Paper white wrapping, 5 qrs.	Mortar, agate, 3 $\frac{1}{2}$ inch.
Ditto, filtering, Schleicher & Schuell's, 595, 5 qrs.	Ditto, wedgewood, 3 inch.
Ditto, filtering, Schleicher & Schuell's, 589 cut c. p. 11 c. m. 3 pck.	Ditto, ditto, 5 $\frac{1}{2}$ inch.
Ditto, filtering, Schleicher & Schuell's, 589 cut c. p. 9 c. m. 2 pck.	Ditto, iron, 2 gallon.
Ditto, filtering, Schleicher & Schuell's, 589 cut c. p., 7 c. m., 4 pck.	Tongs, crucible.
Potassium carbonate, $\frac{1}{2}$ lb.	Pipette, 100 c.c.
Ditto, bi-chromate, 2 lbs.	Ditto, 50 c.c., 2.
Brushes, camel-hair, small, 6	Ditto, 10 c.c.
Ditto, ditto, large, 1.	Platinum triangles, 4 each, 11 grms, 44 grms.
Bulbs for sulphur determination, Troilius improved form, 6.	Plates, porcelain, for testing.
Burettes, Mohr's, 50 c.c. graduated to 1-10 c.c. 1.	Racks, test tube 2.
Burettes, Mohr's, 100 c.c. graduated to 1-10 c.c. 1.	Sieves, copper, with mesh, 50 to 1 inch and 80 to 1 inch.
Carboys for distilled water, 2.	Stands, burette, 1.
Condenser, block tin worm, in zinc tank, to be attached to steam-pipe.	Ditto, for funnels, 6.
Corks, wooden, to fit drilling bottles, 4 gross.	Ditto, retort, iron, with rings.
Corks, wooden, assorted, small, 1 gross.	
Ditto, rubber, ditto, 1 lb.	
Crucibles, porcelain, Royal Berlin, 6, No. 00.	
Crucibles, platinum, each 20 grm. 4=80 grms.	

Cylinders, Erdmann, 4.  
 Ditto, glass, 1000 c.c. graduated to 10 cc.  
     ground stopper.  
 Ditto, ditto, 25 c.c. grad. to 1 c.c. 1.  
 Dishes, porcelain, pint, 4.  
 Ditto, ditto, 4 oz.  
 Files, 4 in.  $\Delta$ , 4.  
 Flasks, 2 gallon, 1.  
 Ditto, 2 qt. 6.  
 Ditto, 1 qt. 12.  
 Ditto, 1 pt. 6.  
 Ditto, 1 pt. ground stopper labelled from A to  
     L, 12  
 Funnels,  $2\frac{1}{2}$  inch, 2 dozen.  
 Ditto,  $1\frac{1}{2}$  inch, 2 dozen.  
 Ditto, 4 inch, 4.  
 Ditto, 9 inch, 2.  
 Ditto, for filtering with asbestos, 12.  
 Glass measuring, 16 oz. graduated.  
 Ditto, covers, Watch,  $2\frac{1}{2}$  inch, 12.  
 Ditto, ditto, ditto, 4 inch, 12.  
 Ditto, ditto, ditto, 5 inch, 12.  
 Hydrometers, one for above 1000 and one for  
     below 1000.  
 Hydrometer Jars,  $18 \times 1\frac{1}{2}$  inch.  
 Labels, gummed, No. 221, 12 boxes.  
 Ditto, reagents, 2 books.

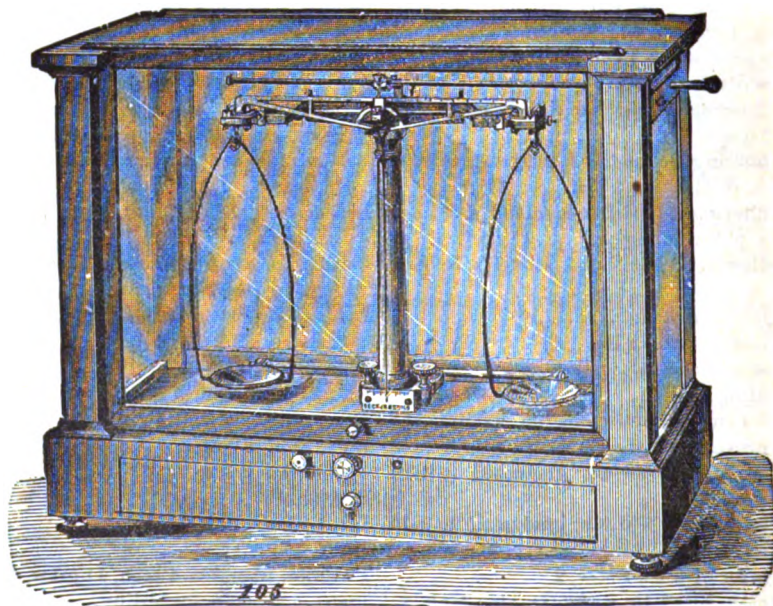
Stand, tripod, 4.  
 Thermometers,  $360$  deg. cent.  
 Rubber Finger Tips, 1 dozen.  
 Tubes, aspirator, Geissler's, 2  
 Ditto, funnel, stop-cock, 2.  
 Ditto, test,  $5 \times \frac{1}{2}$  inch, 5 dozen.  
 Ditto, for carbon determination, 1 set.  
 Ditto, glass, assorted, 3 lb.  
 Rods, glass, assorted, 3 lbs.  
 Rubber Tubing, vulcanized,  $\frac{1}{4}$  inch, 24 feet  
 Rubber Tubing, pure,  $\frac{1}{4}$  inch, 12 feet.  
 Rubber Tubing, pure,  $\frac{3}{8}$ -16, 12 feet.  
 1 dessicator.

## SUNDRIES,

1 Broom ; 1 dust brush and pan ; scissors ;  
     hammer.  
 1 small magnet ; clock ; camera for carbon de-  
     termination.  
 2 baths for carbon determination ; matches.

Total for apparatus ..... \$414 03  
 Total for chemical or reagents .. \$104 60

\$518 63

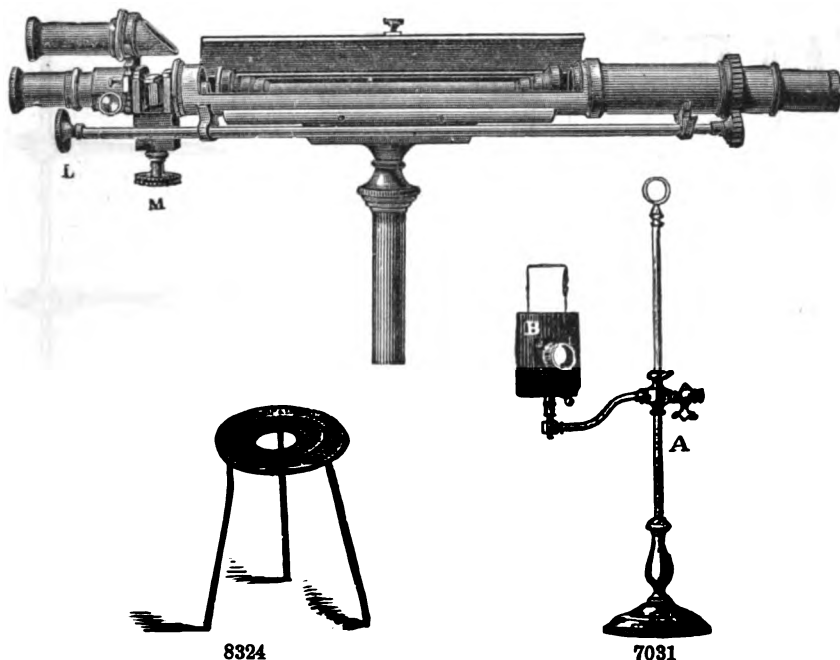


## SUGAR ANALYSIS.

— 8584. Complete Outfit for Saccharimetric Polarization, as per list below, with Polariscopes No. 7013.....\$222 00

With Polariscopes No. 7012 .....\$347 00

The best and standard instruments for these investigations are made by Messrs. Schmidt & Haensch and by Dr. Scheibler, whose agents we are for this country.



Catalogue Nos.

- 7013. Polariscopes or Saccharimeter, Soleil-Scheibler, regular standard. . \$160 00  
 -- 7012. Polariscopes or Saccharimeter, half-shade. new standard. This instrument possesses all the advantages of the Laurent half-shade instrument, and none of its disadvantages. A color-blind person can use it, and determine the percentage of sugar with as much accuracy as any other. It is just as accurate as the Soleil-Ventzke and Soleil-Scheibler, its use is more easily acquired, and it gives surprisingly accurate results in the hands of those without previous experience. It is thus particularly to be recommended to planters, manufacturers and others, who have not the services of a professional chemist. Even for the most experienced chemist we believe it to be the best instrument, because accuracy depends in no way on the color-sensitiveness of the worker, and results are more speedily obtained. Even though the chemist himself is not in the least degree color-blind, a future assistant may be. It is absolutely the best instrument for polarizing dark-colored sugars and molasses. The greatest drawback to the use of half-shade polariscopes like the Laurent heretofore has been the necessity for using the sodium flame with all the inconvenience which this implies. With this new instrument the ordinary gas or kerosene lamp may be used. We shall be pleased to exhibit the working of this new instrument.....\$185 00

With mirror attachment.

- |  |  |
|--|--|
| 7027. 1 Polariscopes Tube, 200 m.m.                    | 6940. 2 Pipettes, 3 c.c.                   |
| 1 " " 100 m.m.   | 1 Pipette, 10 c.c.                         |
| 8324. 1 Tripod.  | 8389. 1 Wash Bottle.                       |
| 7031. 1 Polariscopes Lamp, oil or gas.                 | 5361. 1 Syphon Aspirator Bottle, complete. |
| 1 doz. " Wicks.  | 6388. 2 Funnels.                           |
| 5411. 1 Fine Balance, 300.0, in case.                  | 6288. 1 quire Filter Paper.                |
| 5468. 1 set fine Weights, 200 to 0.001, in case.       | 6134. 2 Dripping Glasses, 5x2 inch.        |
| 6195. 1 German Silver Dish, with counterpoise weights. | 6839. Porcelain Mortar and Pestle, No. 4.  |
| 6357. 2 Graduated Flasks, 50 and 55 c.c.               | 6378. Forceps, ivory tips.                 |
| 2 " " 100 and 110 c.c.                                 | 5466. 1 Sugar Weight, 26.048 grms.         |
|  | 1 " " 13.024 grms.                         |

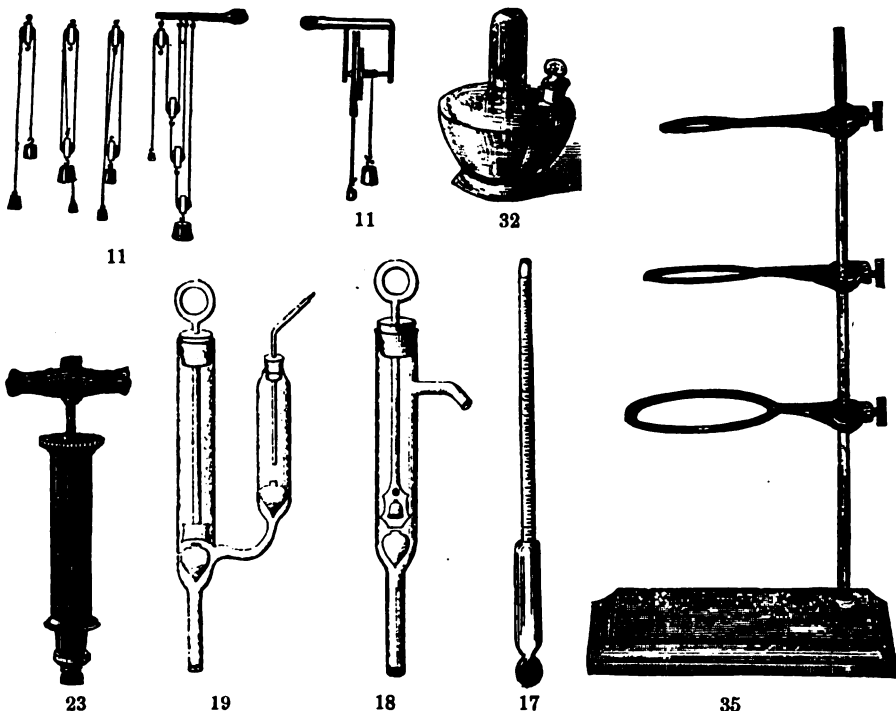
Instructions for using the instrument furnished with the outfit.

— The above sugar-testing outfit complete, with the largest and most improved wedge compensation instrument, No. 7015, and mirror attachment, price.....\$356 00

## SELECTIONS OF PHYSICAL APPARATUS.

For the use of Schools and smaller Institutions.

These sets have been compiled with the intentions of bringing Physical Apparatus within the reach of Students and smaller Institutions. So inexpensive the apparatus are of good workmanship, fully illustrating all the fundamental laws of physics.



## O SET NO. 1.

## LAWS OF MATTER.

1. Universal Support.....	\$ 6 00
2. Set of Balls.....	2 40
3. Set of Wires.....	50
4. Capillary Tubes.....	45
5. Osmose Bell.....	65
6. Cohesion Hemispheres.....	40
7. Adhesion Disk.....	25
8. Gravity Block.....	50
9. Momentum Spring.....	20
10. Whirling Ring.....	2 00
11. Illustration of Pulleys.....	4 00
12. Illustration of Levers.....	35
13. Inclined Plane and Car.....	75
14. Set of Weights.....	1 75

## DYNAMICS.

15. Equilibrium Tubes.....	75
16. Pressure of Liquids.....	1 15
17. Hydrometer.....	75
18. Lifting Pump.....	1 25
19. Force Pump.....	1 25
20. Siphon.....	20
21. Balloon and Car.....	75
22. Glass Jar.....	1 00

## PNEUMATICS.

23. Air Pump.....	7 00
24. Spherical Receiver.....	3 25
25. Magdeburg Hemisphere.....	3 50
26. Barometer Tube.....	45
27. Bell in Vacuum.....	30
28. Sheet Rubber.....	25
29. Rubber Bag.....	1 00
30. Mariotte's Law.....	1 25
31. Stop-Cook.....	1 20

## HEAT.

32. Spirit Lamp.....	45
33. Bar and Gauge.....	75
34. Compound Bar.....	65
35. Lamp Stand.....	85
36. Glass Flask.....	30
37. Palm Glass.....	45
38. Glass Tube.....	15
39. Conductometer.....	50
40. Wire Gauge.....	10
41. Wollaston's Engine.....	2 00

## Set No. 1.—Continued.

## SOUND.

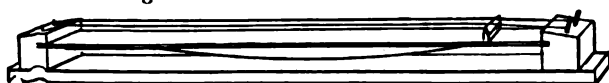
42. Sonometer .....	4 75	57. Soft Iron Bar .....	15
43. Diapason .....	1 00	58. Magnetic Needle .....	60
44. Organ Pipe .....	3 50	59. Iron Turnings .....	10
45. Vibrating Rod .....	50	60. Battery .....	1 50
46. Violin Bow .....	1 25	61. Solenoid .....	1 25
		62. Parallel Currents .....	1 00
		63. Electro-Magnet .....	2 00
		64. Electro Motor .....	0 00
		65. Magneto Machine .....	4 00

## LIGHT.

47. Kaleidoscope .....	65	66. Handles .....	50
48. Thick Mirror .....	20	67. Insulated Wire .....	85
49. Prism .....	30	68. Friction Cylinder .....	35
50. Prismatic Lens .....	35	69. Electroscope .....	50
51. Pair of Lenses .....	1 00	70. Pith Balls .....	25
52. Color Disk .....	1 25	71. Electrical Machine .....	11 00
53. Incidence and Reflection .....	1 00	72. Leyden Jar .....	1 35
54. Irradiation Circle .....	25	73. Discharger .....	1 50
55. Magnifying Lens .....	50	74. Electrical Bells .....	1 10
		75. Spiral Tube .....	2 00

## ELECTRICITY.

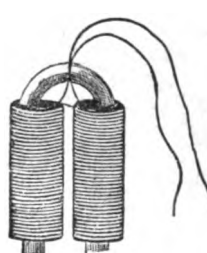
56. Pair of Magnets .....	80		\$100 50
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42



49



63



72

## ○ SET NO. 2.



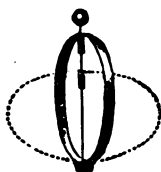
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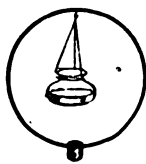
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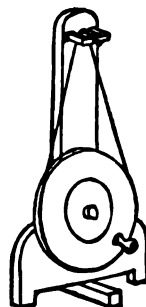
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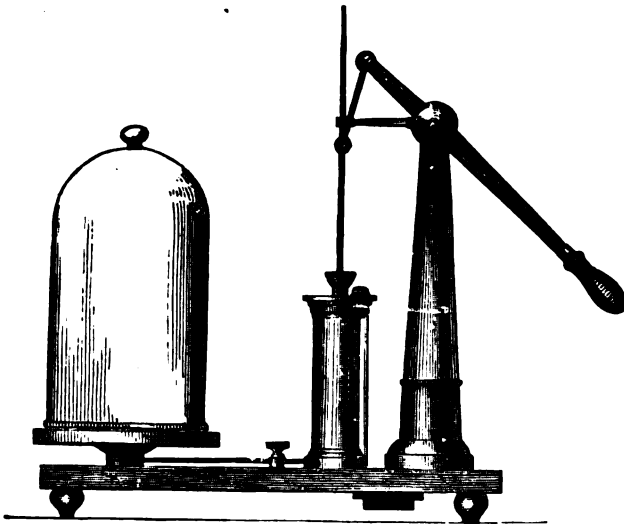


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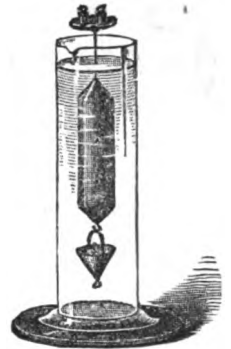
## LAWS OF MATTER.

1. Universal Support .....	\$ 6 00	9. Gravity Block .....	50
2. Set of Balls .....	2 40	10. Momentum Spring .....	20
3. Set of Wires .....	50	11. Whirling Table .....	4 75
4. Capillary Tubes .....	45	12. Central Forces .....	1 25
5. Capillary Plates .....	25	13. Whirling Ring .....	1 35
6. Osmose Bell .....	65	14. Illustration of Pulleys .....	4 00
7. Cohesion Hemispheres .....	40	15. Illustration of Levers .....	35
8. Adhesion Disk .....	25	16. Inclined Plane and Car .....	75
		17. Set of Weights .....	1 75

## Set No. 2.—Continued.



31



22

## DYNAMICS.

18. Equilibrium Tubes .....	\$ 75
19. Buoyancy Vase .....	1 75
20. Pressure of Liquids .....	1 15
21. Archimides Principle .....	1 60
22. Nicholson Hydrometer .....	2 00
23. Hydrometer .....	75
24. Lifting Pump .....	1 25
25. Force Pump .....	1 25
26. Siphon .....	20
27. Tantalus' Cup .....	65
28. Equality of Pressure .....	40
29. Balloon and Car .....	75
30. Glass Jar .....	1 00

## PNEUMATICS.

31. Air Pump .....	21 00
32. Receiver, quart .....	55
33. Receiver, gallon .....	1 10
34. Hand Glass .....	50
35. Magdeburg Hemisphere .....	3 50
36. Guinea and Feather Tube .....	5 00
37. Barometer Tube .....	45
38. Expansion Apparatus .....	40
39. Bacchus Illustration .....	45
40. Sheet Rubber .....	25
41. Rubber Bag .....	1 00
42. Mariotte's Law .....	1 25
43. Stop-Cock .....	1 20

## HEAT.

44. Spirit Lamp .....	45
45. Bar and Gauge .....	75
46. Compound Bar .....	65
47. Lamp Stand .....	85
48. Palm Glass .....	45
49. Glass Tube .....	15
50. Conductometer .....	50
51. Wire Gauze .....	10
52. Fire Syringe .....	1 75
53. Specific Heat .....	1 75
54. Conversion Apparatus .....	75

## SOUND.

55. Crova's Disk .....	45
56. Savart's Wheel .....	40
57. Siren Disk .....	25
58. Sonometer .....	7 50
59. Diapason .....	2 40
60. Organ Pipe .....	3 50
61. Vibrating Rod .....	50
62. Violin Bow .....	1 25
63. Sand Pendulum .....	75

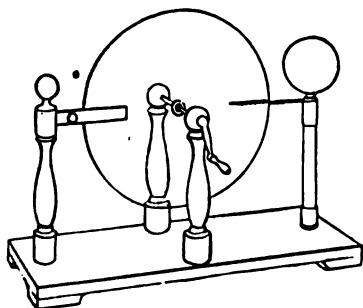
## LIGHT.

64. Kaleidoscope .....	65
65. Thick Mirror .....	20
66. Convex Mirror .....	2 40
67. Concave Mirror .....	2 35
68. Prism .....	40
69. Prismatic Lens .....	35
70. Set of Lenses .....	2 50
71. Color Disk .....	1 00
72. Persistency of Vision .....	60
73. Incidence and Reflection .....	1 00

## Set No. 2.—Continued.

## ELECTRICITY.

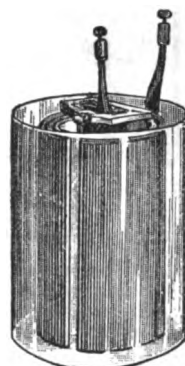
74. Pair of Bar Magnets.....	80	87. Induction Coil.....	6 50
75. Bar of Soft Iron.....	15	88. Handles.....	50
76. U. Magnet.....	50	89. Insulated Wire.....	85
77. Magnetic Needle.....	60	90. Friction Cylinder.....	35
78. Iron Turnings.....	10	91. Electroscope.....	50
79. Grenet Battery.....	3 00	92. Pith Balls.....	25
80. Galvanometer.....	3 25	93. Gold Leaf Electroscope.....	1 10
81. Solenoid.....	1 25	94. Electrical Machine.....	11 00
82. Floating Solenoid.....	75	95. Test Needle.....	35
83. Parallel Currents.....	1 00	96. Faraday's Cap.....	35
84. Electro-Magnet.....	2 25	97. Leyden Jar.....	1 45
85. Helix and Ring.....	2 75	98. Discharger.....	1 50
		99. Electrical Bells.....	1 10
			<hr/>
			\$154 75



94



103



109

## ○ SET No. 3.

Comprises the Instruments in the Set No. 2, with the following:

100. Universal Stand.....	\$ 3 00	111. Decomposing Cell.....	1 20
101. Balance.....	7 50	112. Telegraph Sounder and Key.....	4 75
102. Pascal Vase.....	4 50	113. Magneto-Electric Machine.....	4 00
103. Hydraulic Press.....	6 75	114. Set of Resistance Coils.....	4 00
104. Wollaston's Engine.....	2 00	115. Set of five Spools.....	2 75
105. Chladni's Plate.....	1 50	116. Movable Coatings Jar.....	2 75
106. Savart's Bell.....	3 00	117. Spiral Tube.....	2 00
107. Achromatic Prism.....	3 25	Included in Set No. 2.....	154 25
108. Dipping Needle.....	2 25		<hr/>
109. Bunsen's Battery.....	1 50		\$211 85
110. Electrolysis of Salts.....	40		

## SELECTIONS OF PHYSICAL APPARATUS.

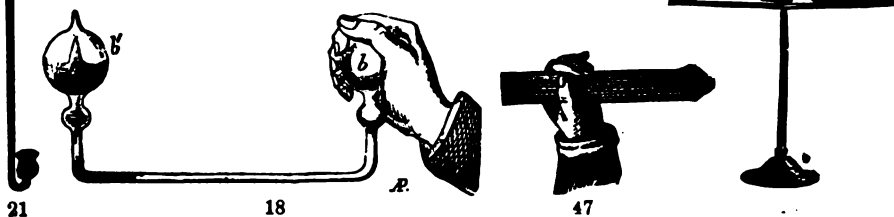
For the use of High Schools, Colleges and Universities.

These Sets of Apparatus have been compiled with great care, to include the most desirable instruments to prove the important Laws of Physical Science, as taught in all the modern school books, avoiding duplications of experiments, and making each as perfect as possible for the cost of the set.

Any desired alterations may be made, departments omitted, or taken from different sets; or any changes in the articles from the Catalogue, with corresponding reductions from the list prices.

These Instruments have been for thirty-five years universally approved for their excellence in quality and construction.

## - SET NO. 1.



## LAWS OF MATTER.

1. Adhesion Disk.....	30
2. Capillary Tubes.....	60
3. Endosmeter.....	75
4. Inertia Apparatus.....	60
5. Collision Balls.....	3 75
6. Ritchie's Gravity Block.....	50
7. Whirling Ring.....	2 20
8. Lever.....	80
9. Pair of Pulleys.....	2 00
10. Set of Weights.....	2 00

## HYDRODYNAMICS.

11. Equilibrium Tubes.....	2 00
12. Upward Pressure.....	1 20
13. Siphon.....	25
14. Lifting Pump.....	1 50
15. Force Pump.....	1 50

## PNEUMATICS.

16. Air-Pump.....	13 50
17. Receiver.....	80
18. Hand-Glass.....	55
19. Expansion Apparatus.....	40
20. Magdeburg Hemispheres.....	5 00
21. Barometer Tube.....	1 25
22. Guinea and Feather Tube.....	5 75
23. Sheet Rubber.....	35
24. Collars and Oil.....	35

## HEAT.

25. Spirit Lamp.....	75
26. Fire Syringe.....	1 75
27. Bar and Gauge.....	1 15
28. Wire Gauze.....	30
29. Conductometer.....	1 25
30. Principles of Ventilation.....	1 50
31. Palm Glass.....	50

## HEAT.—Continued.

32. Lamp Stand.....	85
33. Pint Flask.....	30

## OPTICS.

34. Prism.....	40
35. Prismatic Lens.....	85
36. Demonstration Lenses.....	2 75
37. Newton's Disk.....	1 25
38. Magnifying Lens.....	50

## ELECTRICITY.

39. Glass Cylinder.....	30
40. Electrical Machine.....	11 50
41. Electrometer.....	50
42. Flier.....	1 00
43. Electrical Balls.....	1 25
44. Pith Balls.....	25
45. Leyden Jar.....	1 50
46. Discharger.....	1 50
47. Bar Magnet.....	60
48. Magnetic Needle.....	65
49. Grenet Battery.....	3 50
50. Galvanometer.....	3 25
51. Powder Cup.....	90
52. Electrolysis of Salts.....	65
53. Solenoid.....	1 25
54. Electro-Magnet.....	2 25
55. Set of Wires.....	50

## LAWS OF MATTER, 1-10..... 13 50

## HYDROSTATICS, 11-15..... 6 45

## PNEUMATICS, 16-24..... 27 95

## HEAT, 25-33..... 8 35

## OPTICS, 34-38..... 5 25

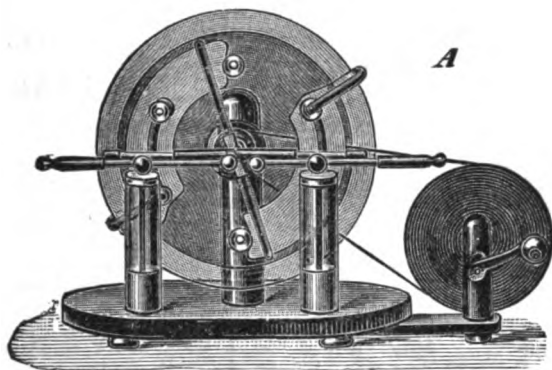
## ELECTRICITY, 39-55..... 31 25

## Box and Packing..... 1 75

**\$94 60**



## - SET NO. 2.



57

## MECHANICS.

## ACOUSTICS.

1. Adhesion Disk .....	\$ 30
2. Capillary Tubes .....	60
3. Endosmeter .....	75
4. Inertia Apparatus .....	65
5. Collision Balls .....	3 75
6. Ritchie's Gravity Block .....	50
7. Pendulums .....	1 25
8. Whirling Ring .....	2 20
9. Lever and Fulcrum .....	80
10. Wedge .....	1 00
11. Four Pulleys, and bar fitted to No. 24 .....	3 50
12. Set of Weights .....	2 00

43. Violoncello Bow .....	1 50
44. Resonant Jar .....	1 50
45. Diapason .....	6 50
46. Organ Pipe and Slider .....	3 75
47. Sonometer .....	10 00

## OPTICS.

48. Convex Mirror .....	2 50
49. Concave Mirror .....	2 75
50. Kaleidoscope .....	65
51. Prism .....	55
52. Prismatic Lens .....	35
53. Demonstration Lenses .....	2 75
54. Newton's Disk .....	1 25

## HYDRODYNAMICS.

## ELECTRICITY.

13. Equilibrium and Buoyancy .....	1 75
14. Pressure of Liquids .....	1 35
15. Hydrometer .....	1 00
16. Hydrometer Jar .....	40
17. Bottle Imp. .....	20
18. Siphon .....	25
19. Tantalus' Cup .....	80
20. Hydraulic Press .....	7 75
21. Lifting Pump .....	1 50
22. Force Pump .....	1 50

55. Glass Cylinder .....	30
56. Vulcanite Cylinder .....	65
57. Toepler-Holtz Machine .....	25 00
58. Electrometer .....	50
59. Gold Leaf Electrometer .....	1 25
60. Flier .....	1 00
61. Electrical Bells .....	1 25
62. Pith Balls .....	25
63. Spiral Tube .....	2 25
64. Movable Coatings Jar .....	3 00
65. Leyden Jar .....	1 50
66. Discharger .....	1 50
67. Bar Magnets, two .....	90
68. Magnetic Needle .....	65
69. Grenet Battery .....	3 50
70. Oersted's Galvanometer .....	3 25
71. Powder Cup .....	90
72. Electrolysis of Salts .....	65
73. Solenoid .....	1 25
74. Electro-Magnet .....	2 25
75. Telegraph Sounder and Key .....	4 75
76. Set of Wires .....	50
77. Galvanometer .....	3 25
78. Resistance Coils .....	4 00

## PNEUMATICS.

23. Air Pump .....	13 50
24. Receiver .....	80
25. Hand Glass .....	55
26. Expansion Apparatus .....	40
27. Magdeburg Hemispheres .....	5 00
28. Water Hammer .....	65
29. Barometer Tube .....	1 25
30. Guinea and Feather Tube .....	5 75
31. Rubber Bag .....	1 50
32. Sheet Rubber .....	20
33. Collars and Oil .....	50

## HEAT.

34. Spirit Lamp .....	75
35. Bar and Gauge .....	1 15
36. Compound Bar .....	85
37. Wire Gauze .....	30
38. Conductrometer .....	1 25
39. Principles of Ventilation .....	1 50
40. Specific Heat .....	2 25
41. Palm Glass .....	50
42. Lamp Stand .....	85
43. Glass Flask .....	30

MECHANICS, 1-12 .....	17 30
HYDRODYNAMICS, 13-21 .....	16 50
PNEUMATICS, 22-32 .....	30 10
HEAT, 33-42 .....	9 70
ACOUSTICS, 43-47 .....	23 25
OPTICS, 48-54 .....	10 80
ELECTRICITY, 55-78 .....	64 05
Boxing and Packing .....	3 50

\$175 45

## - SET NO. 3.

## MECHANICS.

1. Universal Support.....	6 00
2. Universal Stand.....	3 00
3. Adhesion Disk.....	30
4. Set of Balls.....	2 40
5. Capillary Plates.....	40
6. Set of Wires.....	50
7. Capillary Tubes.....	60
8. Endosmeter.....	75
9. Osmose of Gases.....	30
10. Momentum Spring.....	20
11. Whirling Table.....	4 75
12. Inertia Apparatus.....	60
13. Central Forces.....	1 25
14. Whirling Ring.....	1 35
15. Atwood Machine.....	15 00
16. Ritchie's Gravity Block.....	50
17. Gyroscope.....	2 25
18. Path of Projectile.....	3 25
19. Set of Pulleys.....	4 00
20. Set of Gears.....	2 00
21. Lever.....	35
22. Inclined Plane and Car.....	75
23. Wedge.....	1 00
24. Set of Weights.....	2 00
25. Metric Rod.....	40
26. Balance.....	9 75
27. Spring Balances, two.....	30

## HYDRODYNAMICS.

28. Equilibrium Tubes.....	2 00
29. Buoyancy Vases.....	1 75
30. Pascal's Vases.....	4 50
31. Pressure of Liquids.....	1 35
32. Archimedes' Principle.....	1 75
33. Imp in Jar.....	50
34. Hydrometer, light.....	1 00
35. Hydrometer, heavy.....	1 00
36. Hydrometer Jar.....	40
37. Siphon.....	24
38. Tantalus' Cup.....	80
39. Hydraulic Press.....	7 75
40. Lifting Pump.....	4 00
41. Force Pump.....	6 50
42. Liquid Jet Apparatus.....	5 25

## PNEUMATICS.

43. Air-Pump.....	26 00
44. Receiver, one qt. plain.....	50
45. Receiver, 2 gal. capped.....	3 00
46. Hand-Glass.....	55
47. Expansion Apparatus.....	40
48. Magdeburg Hemispheres.....	5 00
49. Water Hammer.....	65
50. Bacchus Illustration.....	2 00
51. Weight and Buoyancy.....	6 00
52. Barometer Tube.....	1 25
53. Guinea and Feather Tube.....	5 75
54. Bell in Vacuum.....	1 55
55. Rubber Bag with stop-cock.....	2 25
56. Sheet Rubber.....	35
57. Collars and Oil.....	50
58. Mariotte's Law.....	2 50
59. Screw Plug.....	45
60. Sliding Rod.....	1 50

## HEAT.

61. Spirit Lamp.....	75
62. Fire Syringe.....	1 75
63. Bar and Gauge.....	1 15
64. Pyrometer.....	4 20
65. Compound Bar.....	85
66. Thermometer in Tube.....	1 25
67. Lamp Stand.....	85
68. Air Thermometer.....	25
69. Comparative Thermometer.....	1 00
70. Wire Gauze.....	30
71. Conductometer.....	1 75
72. Principles of Ventilation.....	1 50
73. Pair of Reflectors.....	7 00
74. Specific Heat.....	2 25
75. Palm Glass.....	50
76. Wollaston's Globe.....	2 25

## ACOUSTICS.

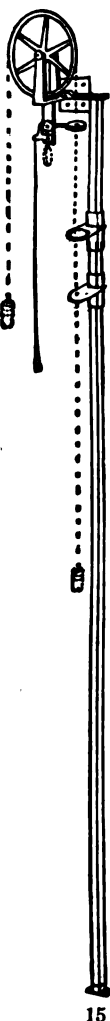
77. Cord of Wire.....	1 75
78. Violoncello Bow.....	1 50
79. Crova's Disk.....	45
80. Savart's Bell Resonator.....	3 00
81. Savart's Wheel.....	40
82. Diapason on Case.....	6 50
83. Organ Pipe and Slider.....	3 75
84. Reed Pipe.....	4 00
85. Sonometer.....	10 00
86. Rods of Fir.....	2 00
87. Circular Plate.....	2 25
88. Hopkins' Tube.....	2 75
89. Sand Pendulum.....	75
90. Lissajou's Apparatus.....	2 65
91. Manometric Flames.....	2 00

## OPTICS.

92. Convex Mirror.....	2 75
93. Concave Mirror.....	3 00
94. Kaleidoscope.....	65
95. Pair Mirrors.....	4 00
96. Polariscope.....	4 00
97. Mica Plates.....	20
98. Incidence and Reflection.....	1 00
99. Persistency of Vision.....	60
100. Prism.....	75
101. Achromatic Prism.....	3 50
102. Demonstration Lenses.....	2 75
103. Set of Disks.....	2 00
104. Eye Model.....	4 50
105. Zoetrope.....	2 75
106. Iceland Spar.....	50

## ELECTRICITY.

107. Glass Cylinder.....	30
108. Vulcanite Cylinder.....	65
109. Faraday's Cap.....	35
110. Electrophorus.....	2 50
111. Toepler-Holtz Machine.....	25 00
112. Conductor.....	3 50
113. Test Needle.....	35
114. Faraday's Bag.....	1 25
115. Electrometer.....	50
116. Gold Leaf Electrometer.....	1 25
117. Flier.....	1 00



## Set No. 3.—Continued.

118. Electrical Bells.....	1 25
119. Plate of Dancing Balls.....	65
120. Pith Balls.....	25
121. Electric Spoon.....	75
122. Spiral Tube.....	2 25
123. Movable Coat Jar.....	3 00
124. Diamond Jar.....	3 00
125. Set of Leyden Jars.....	3 75
126. Jointed Discharger.....	2 50
127. Set of Points.....	1 50
128. Gassiot's Cascade.....	1 00

## MAGNETISM.

129. Bar Magnets, two.....	1 20
130. Bar of Iron.....	15
131. Magnetic Needle.....	65
132. U Magnet.....	60
133. Mayer's Magnets.....	25
134. Wheel Armature.....	50
135. Daniel Battery.....	2 00
136. Grenet Battery.....	3 50
137. Oersted's Galvanometer.....	3 25
138. Powder Cup.....	90
139. Electrolysis of Salts.....	1 25
140. Decomposing Cell.....	2 50
141. Voltmeter.....	85
142. Parallel Currents.....	1 00
143. Solenoid.....	1 25
144. De la Rive's Ring.....	75

## MAGNETISM.—Continued.

145. Contracting Helix.....	2 50
146. Lifting Coil.....	1 50
147. Electro Magnet.....	2 25
148. Revolving Magnet.....	7 00
149. Insulated Wire.....	85
150. Page's Shocker.....	7 50
151. Handles and Wires.....	1 50
152. Telegraph Sounder and Key.....	4 75
153. Telegraph Relay.....	3 50
154. Magneto-Electric Machine.....	4 00
155. Resistance Coils.....	4 00
156. Set of Spools.....	2 75
4 Screw Connectors.....	89
157. Induction Coil.....	7 00

Mechanics, 1-27.....	63 95
Hydrodynamics, 28-42.....	38 80
Pneumatics, 43-60.....	60 20
Heat, 61-76.....	27 60
Acoustics, 77-91.....	43 75
Optics, 92-106.....	32 95
Electricity, 107-128.....	58 55
Magnetism, 129-157.....	70 50
Boxing and Packing.....	7 50
	<hr/> \$401 80

**Tyndall's set of Electrical Apparatus.**—To perform all the experiments in Tyndall's "Lessons in Electricity," consisting of 57 separate pieces in box packed ready for shipment.....\$65 00

**Physical Apparatus** of European manufacture, or of special designs according to foreign works on Physics, imported to order duty free, at manufacturer's original prices, see special Import Catalogue.

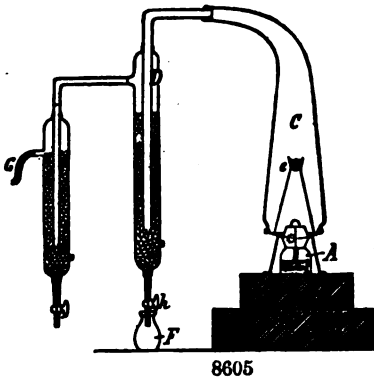
**EIMER & AMEND.**



# Eimer & Amend's Prices Current.

## ⚙ SUPPLEMENT ⚙

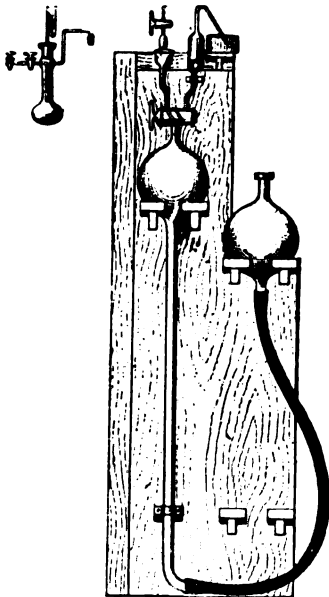
- \* 8600. Adjusting table, of brass, with three set screws. For exact adjustment of hydrometer jars, graduates, etc. .... \$4 00
- \* 8601. Air pump, Mercury, Greiner & Friedrich's, arranged for fastening to wall ..... 40 00
8602. Ditto, ditto, with base, see No. 8603 ..... 50 00
- \* 8603. Ditto, ditto, with crank to elevate the mercury vessel ..... 80 00
8604. Ditto, ditto, much larger size ..... 108 00



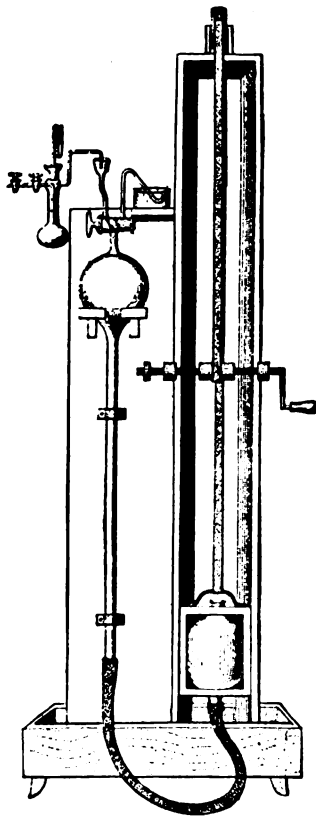
8605



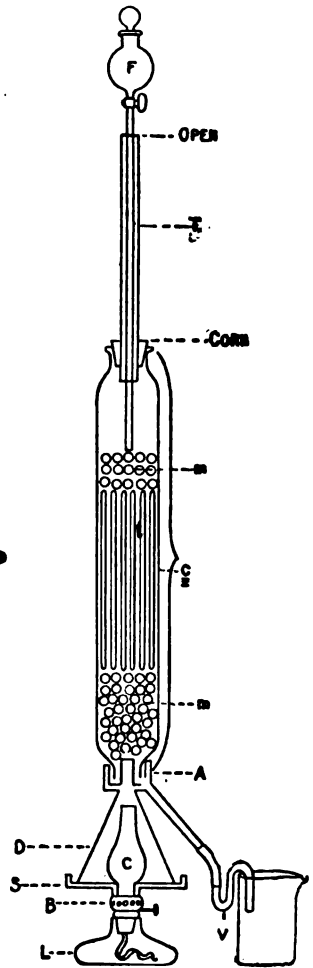
8600



8601



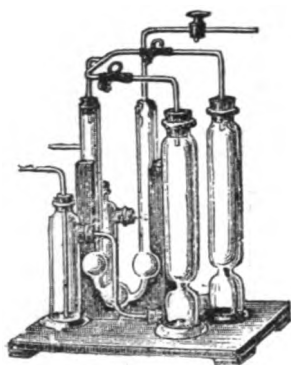
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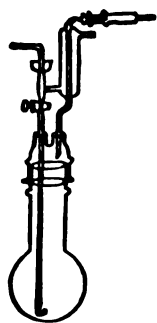
8605a.

- \* 8605. Apparatus, Allen's, for estimating sulphur in oils, complete .15 00
- \* 8605a. Ditto, Dr. Elliott's for determining amount of sulphur in illuminating gases and burning oils, with lamps ..... \$12 00
- Mounted on iron support ..... 15 00

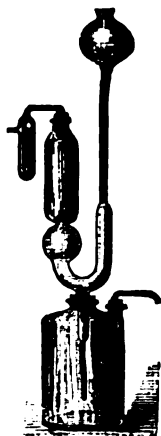
- ◊\* 8606. Apparatus for drying, Glaser's..... 7 50  
 \* 8607. Apparatus. Finkner's, for determining carbon in iron..... 7 50  
     Ditto, for estimating sulphur in iron..... 3 50  
 \* 8608. Apparatus for generating H, H<sub>2</sub>S and Co, after Steenbuch..... 5 50  
 \* 8609. Ditto, Kipp's, improved..... 10 00  
 ◊\* 8610. Apparatus for generating sulphuretted hydrogen in large quantities,  
     E. & A.'s, suitable for college laboratory. Generator, 6 gallon capacity, Woulff  
     bottle of stoneware, rubber stoppers, glass stopcocks and connections, com-  
     plete with plain clamp..... \$25 00 With double clamp..... \$10 00 extra.  
     See Report of Commissioner of Agriculture Department Station.  
     Any size larger, up to 75 gallons, from \$35.00 up to \$150.00.



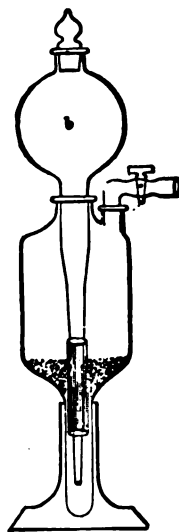
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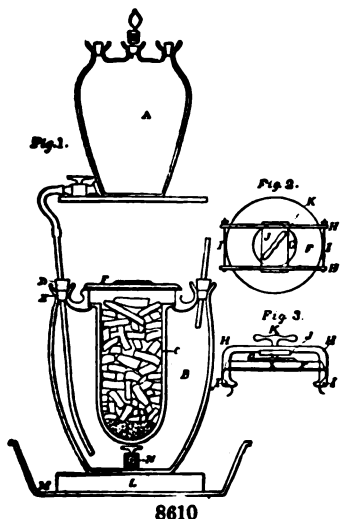
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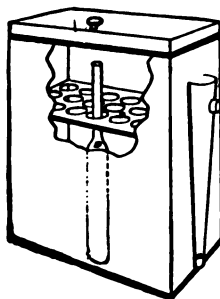
8608



8609



8610



8612a

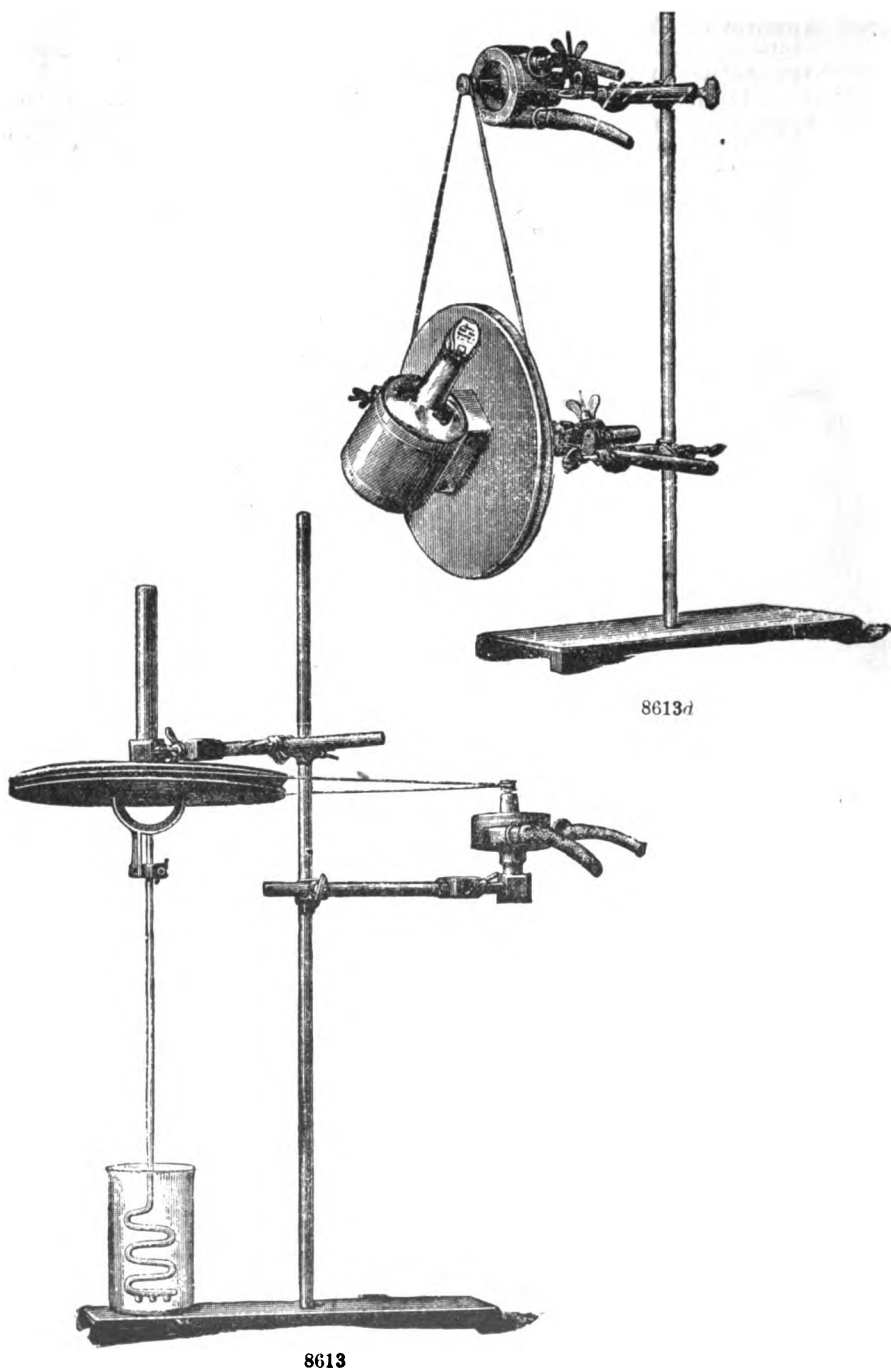


8612b

8612. Apparatus, milk testing, Short's, complete..... 15 00

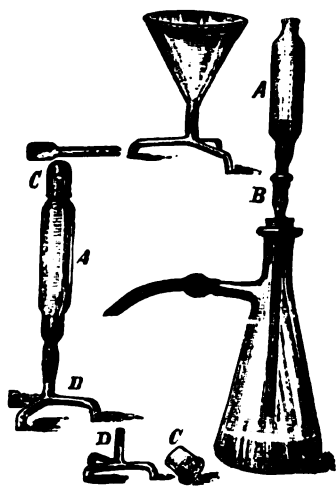
The set includes:

- \* 8612a. One copper water bath and rack..... 7 00  
 \* 8612b. 12 tubes, 2 c. c., graduated..... 4 50  
 8612c. 12 tubes, plain..... 2 25  
 8612d. 2 pipettes, 2 c. c. graduated..... 0 20  
 8612e. 1 pipette, 20 c. c. graduated..... 0 25  
 8612f. 1 wash bottle, pint..... 0 60



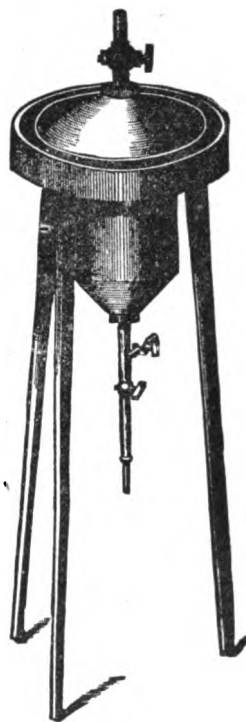
* 8613. Apparatus for stirring, Rabe's, complete.....	\$16 00
8613a. Turbine alone .....	7 50
8613b. Shaking arrangement.....	3 50
8613c. Ditto, and disc.....	5 50
* 8613d. Apparatus for shaking, complete.....	17 00

- \* 8614. Vacuum Distilling Apparatus, for laboratory experiments, capacity of inner metal vessel 7 litres. Vacuum produced by Filter Pump. Complete mounted including filter pump.....\$120 00
- \* 8615. Apparatus for weighing on tared filters, complete set ..... 5 00
- 8616. Aspirator Bottles, of March's famous stoneware. 6 gallons capacity. Stoppered and with stop-cock. Suitable as reservoir for distilled water.. 12 00
- \* 8617. Aspirators, Winkler's, of zinc..... \$15 00
- 8617a. Ditto, of copper, finely finished..... 25 00

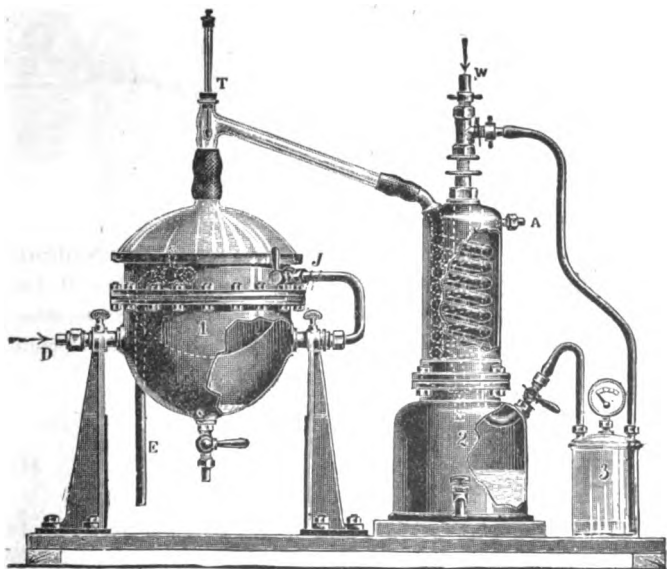


8615

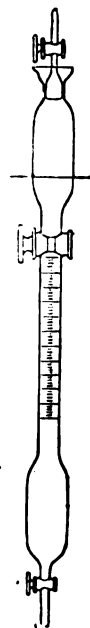
For Assayers' Supplies,  
see Balances, Furnaces,  
and our large catalogue.



8617



8614



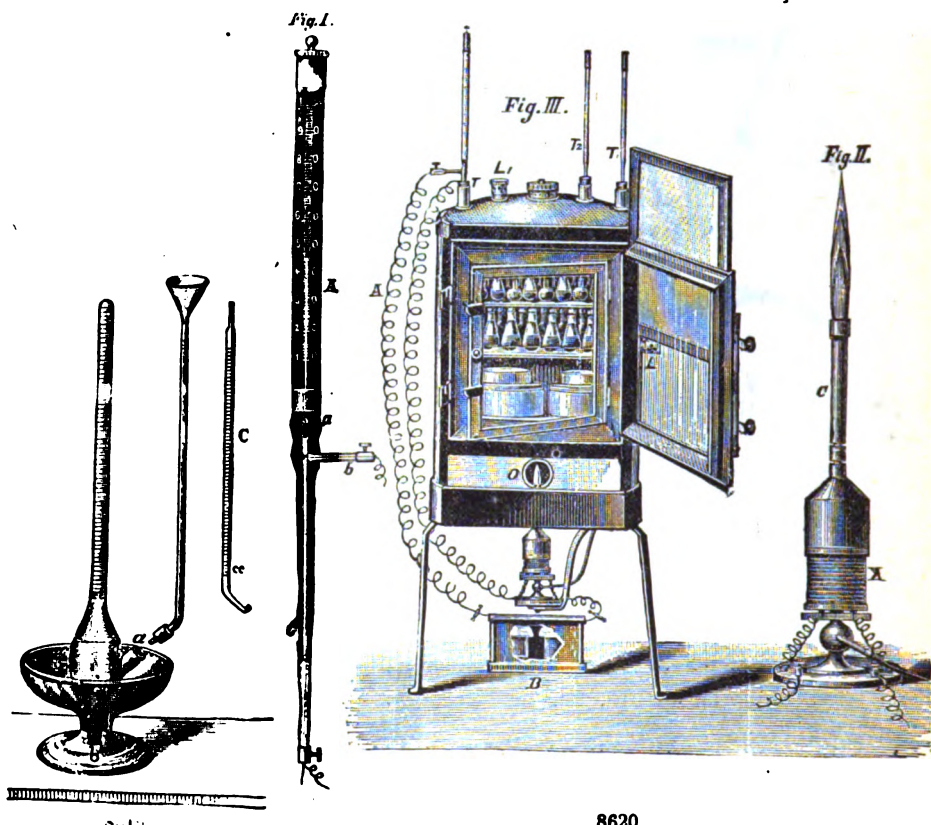
8618

- \* 8618. Azotometer or Nitrometer, Franke's..... 10 00

- \* 8619. Azotometer, Marshall's, Urea..... 3 00

**Bacterioscopic Apparatus and supplies are a specialty with us.**

We have in stock a large variety, and our arrangements enable us to import at makers' prices. Our facilities for making to order Bacterioscopic apparatus are unequalled in this country.



8620

**Culture Ovens, after Dr. Carl Abel, with new arrangement for keeping absolutely constant temperatures, made by F. & M. Lautenschläger, Berlin.** This apparatus is the best ever made, requires no attention, is warranted, and abroad, where it is used extensively, is considered practically perfect.

- \* 8620. All of copper, superior finish,

15 in. high, 10 in. wide, 10 in. deep, inside.....\$150 00

8621. Ditto, ditto, 15½ in. high, 19½ in. wide, inside, 10 in. deep..... 180 00

8621a " " 26 " 24 " " 12 " ..... 260 00

**Electric Regulator, for gas, complete with electric thermometer, electro magnet, battery, in oakwood case, connecting wires, mercury regulator, etc., with directions.....\$45 00**

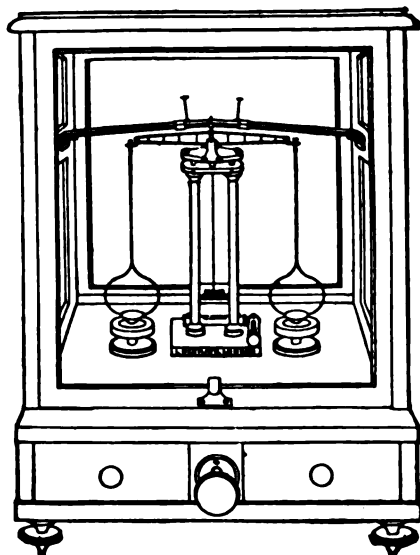
**Koch's Safety Burner for same, with support..... 10 00**



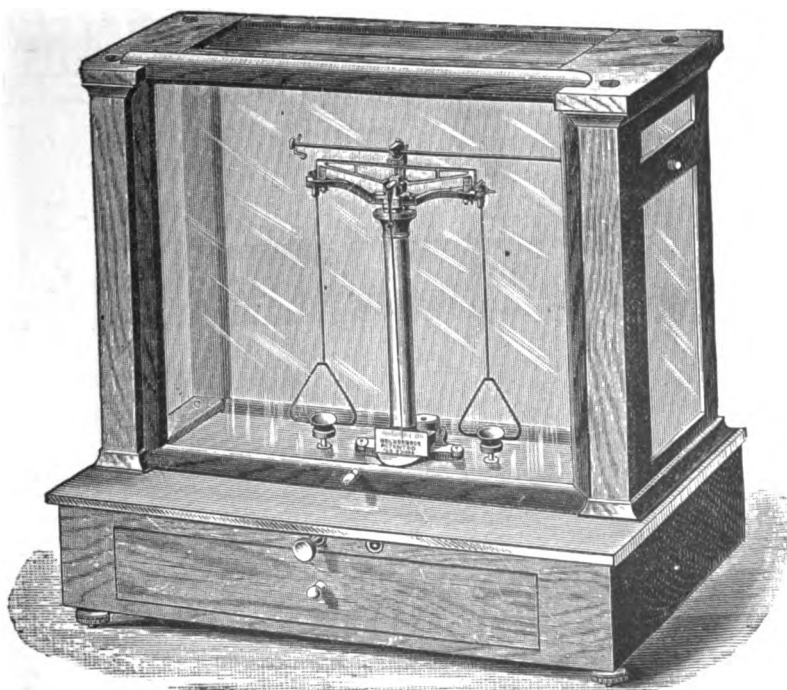
## BALANCES.

AT MAKER'S PRICES.

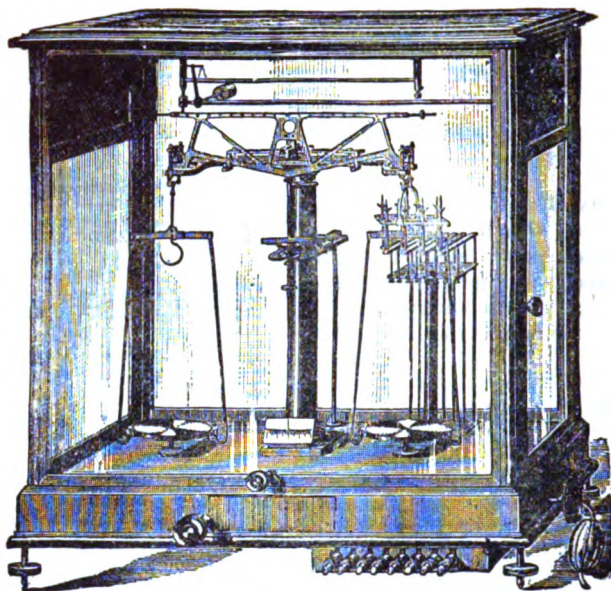
- \* 8622. Assay Balance, Becker's Improved, short beam, agate planes and knives. Glass Plate. Beam graduated in 1-50 milligr. Needle deviates 50 divisions for 1 milligr. .... \$135 00
- 8622a. Ditto, ditto, with aluminium beam, bows, pans, etc. .... 145 00
- \* 8623. Assay Balance, Oertling's, Short Beam, capacity 30 grains. Sensitive to 1-1000 grain, glass plate. Rapid and accurate. \$250 00



8623

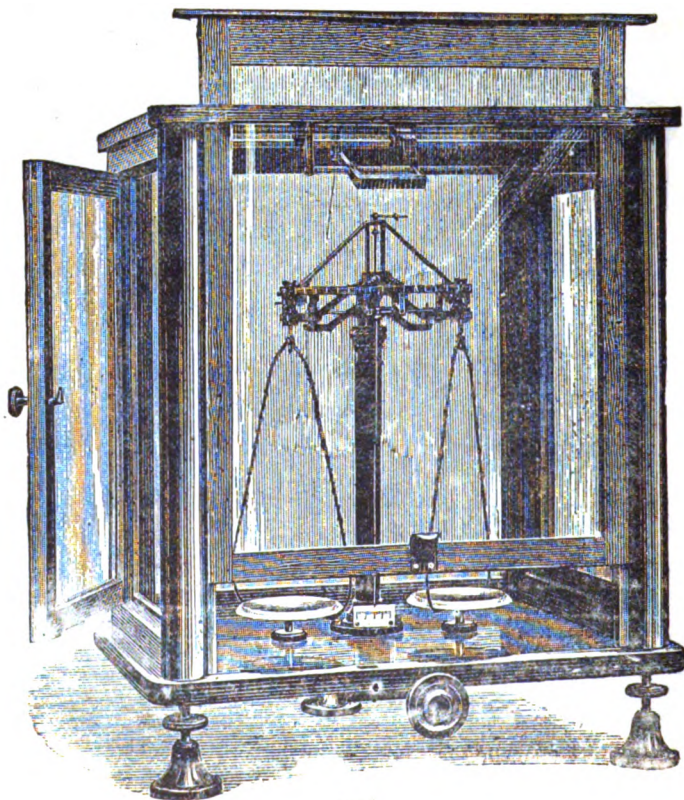


8622



8624

- \*8624. Analytical Balance, Automatic, rapid and exact, 200 grammes capacity each pan, sensitive to 1-10 milligr., provided with automatic mechanism for varying the sensibility and handling the weights, when case is closed. Including weights of platinum from 1 gramme down..... \$250 00



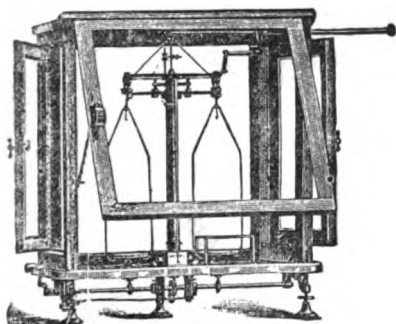
8625

- \* 8625. Analytical Balance, Sartorius' Latest Model, sensitive to 1-10 mill gr. 200 grammes capacity each pan with aluminium beam, No. 100. .... \$200 00  
 8625a. Ditto, with phosphorous bronze beam, No. 102. .... 125 00

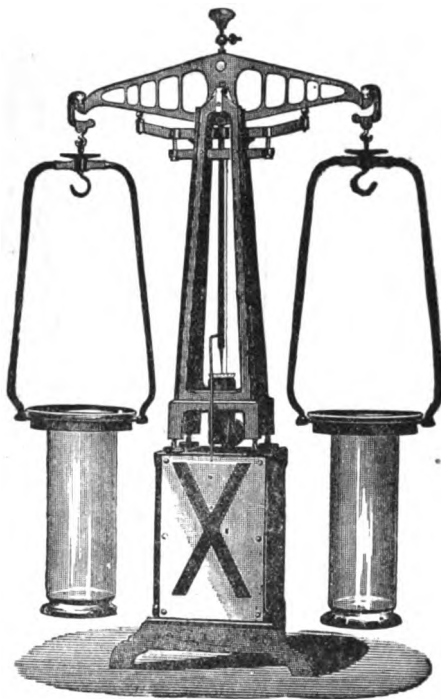
8626. **Analytical Balances, Sartorius', etc.**, without special balancing attachment on beam. No. 103, with bronzed iron column.....\$80 00
8627. Ditto, ditto, with bronzed iron column. No. 104 ..... 70 00
- \* 8628. **Analytical Balance, Bunge's**, capacity, 200 grammes, sensitive to 1-10 milligr. Agate planes and knife edges, glass plate, finely finished.....\$175 00
- All other Bunge's Balances imported to order.

**Analytical Balances, Becker's Rotterdam Short Beam, Rapid, Accurate.**

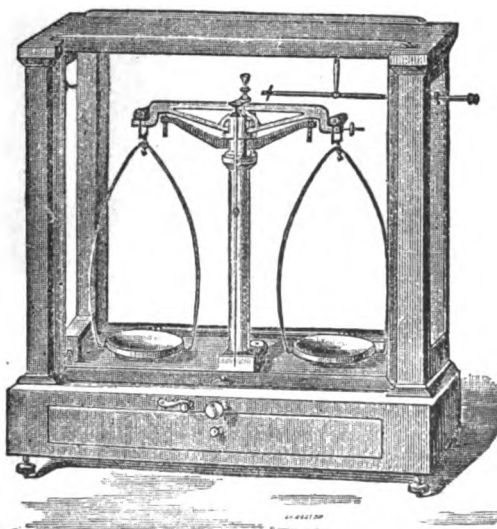
- 8629. **Analytical Balance, Improved, Short Beam**, glass plate, finely finished, capacity, 100 grammes, agate bearings, sensitive to 1-10 milligr. ....\$90 00
- Beam graduated into 1-10 milligr. See illustration No. 5393, large Catalogue
- Agate knife edges for above, extra...10 00
- \* 8630. **Analytical Balances, Short Beam**, capacity, 100 grammes, with improved arrest for pans, agate bearings, beam graduated in 1-5 milligr., sensitive to 1-10 milligramme ..... \$60 00
- With agate knife edges ..... 65 00



8628



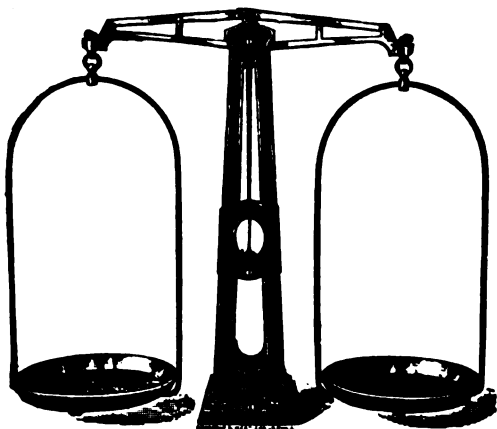
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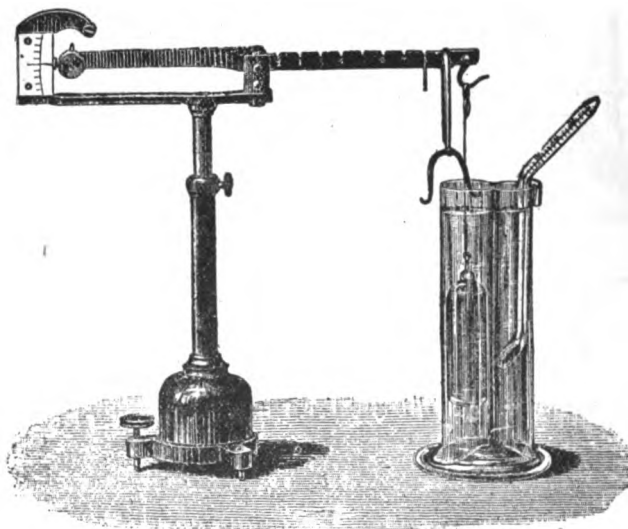
8630

- \* 8631. **Balance for the Lecture Room, or Chemical Laboratory**, capacity, 5 kilogrammes, complete outfit, in case ..... \$150 00

8632. **Balance**, only, same as above ..... \$120 00  
 8633. Ditto, ditto, for Physical Laboratory, 1 kilo capacity ..... 70 00  
 \* 8634. **Balance**, for weighing large vessels. Very suitable for making standard solutions. Beam, 18 inches long, height above pans, 18½ inches, pans, 10 inches diameter, capacity, 10 kilos. .... \$18 00  
 —\* 8636. **Sartorius' Hydrostatic Balance**, for specific gravity determination of liquids, complete in case. .... \$30 00  
 ○ 8636a. Ditto, ditto, Genuine Westphal's ..... 25 00



8634



8636

## WEIGHTS.

**Adjusted to the utmost accuracy.**

In polished boxes, velvet lined, fractions of grammes of platinum.

- 8637. **Analytical Weights, No. 1 quality**, 500 grammes and down to 1 milligr. with riders ..... Becker's make, \$28 00    Our make, \$24 00  
 — 8638. Ditto, 1000 grammes and down to 1 milligr. with riders 35 00    "    "    30 00  
 — 8639. **Analytical Weights, No. 2 quality**, 2 kilogrammes and down to 1 milligramme ..... \$18 60  
 — 8640. Ditto, 5 kilogrammes and down to 1 milligr ..... \$31 50  
 — 8641. Ditto, 10 kilogrammes and down to 1 milligr ..... \$53 75

## BATTERIES.

\* 842. Batteries, Meidinger's, Lower vessel, 7 inches high, small, each.....\$1 60

Ditto, ditto, 8½ inches high, large, each..... 2 00

\* 843. Nickel-Plating Battery. An improved Bunsen Cell of great power, for electro-plating, electro-motors, etc. One hundred gallons of nickel solution have been used successfully with two of these cells. The glass jars contain six quarts, forming a very convenient tank for experimental work.

Cell complete.....	\$5 00	
Carbon, 1x4½x9.....	\$1 60	Glass Jar, 6x8x9 inchca.... 1 00
Carbon Clamp, Platinum faced. 1 00		Zinc, heavy rolled..... 1 00
Porous Cup..... 50		Zinc Connector..... 15



8642

○ 8644. Batteries, dry,

Phenix.....	\$1 10
Mesco.....	25

Batteries, Storage, (Accumulators,) any make at manufacturers' prices.

\* 845. Blast Arrangement, connected with water faucet, will operate Bunsen's Blast Lamp perfectly, each \$4.00. With 3 metal stopcocks..... \$8 00



8643



8645



8647

## BOTTLES.

Re-agent Bottles, flint glass, indestructible enamelled labels, finest quality ever made.

The background of this label is of white enamel, forming letters in clear block type, surface of bottle.

- If of light colored green glass, 10% less.

- 8646. Bottles, Tinctures, with high or flat stoppers.

Capacity,	4	8	12	16	32 ounces.
	.65	.75	.85	.90	\$1 10 each.

\* 8647. Ditto, ditto, with high, cut stoppers.

Capacity,	4	8	12	16	32 ounces.
	.75	.85	\$1 00	1 05	1 30 each.

- 8648. Bottles, Tincture, salt-mouth, with high or flat stoppers,  
Capacity,      2      4      8      16 ounces.  
                     .60      .70      .85      .95 each.
- 8649. Ditto, ditto, with cut hexagon stoppers.  
Capacity,      2      4      8      16 ounces.  
                     .65      .80      .95      \$1 15 each.
- 8650. Bottles, same as above, but with labels, without (outside) band. Sizes to 12 oz. inclusive, at 5c. each less. Sizes, 16 to 48 oz. inclusive, at 10c. each less.
- 8651. Ditto, with ordinary black enamelled lettering, about 40% less than above list prices.
- 8652. Ditto, ditto, but with border, about 30% less than above list prices.
- \* 8653. Bottles, Specific Gravity, Squibbs'. For different standard volumes.  
Capacity,      25 CC.      50 CC.      100 CC.  
                     \$3 00      3 25      3 75 each.
8654. Ditto, with extra wide necks for solids, 10% more.
- \* 8655. Bottles, for dropping, stopper closes bottle or allows liquid to flow and air to enter.
- |               |      |           |
|---------------|------|-----------|
| $\frac{1}{2}$ | 1    | 2 oz.     |
| \$1 40        | 1 60 | 1 80 doz. |
| .15           | .18  | .20 each. |



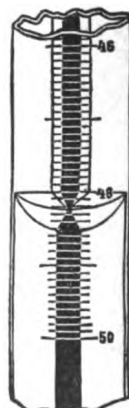
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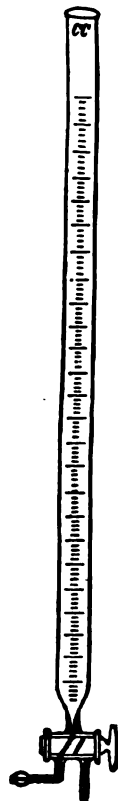
8655



8657



8657a



8658

## BURETTES.

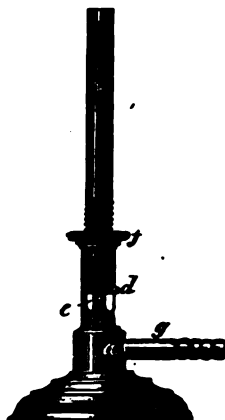
Burettes, new form. Blue enamelled strip on white enamelled background.  
Illustration No. 8657a shows principle.

8656. For use with pinch-cocks.
- |            |            |            |             |
|------------|------------|------------|-------------|
| 25 CC 1-10 | 50 CC 1-10 | 100 CC 1-5 | 100 CC 1-10 |
| \$1 20     | 1 75       | 2 25       | 2 65        |
- \* 8657. With Geissler's stop-cocks.
- |            |            |            |             |
|------------|------------|------------|-------------|
| 25 CC 1-10 | 50 CC 1-10 | 100 CC 1-5 | 100 CC 1-10 |
| 2 00       | 2 75       | 3 00       | 3 50        |
- \* 8658. Ditto, with new 3-way stop-cock and side tube for filling from reservoir.
- |           |            |            |            |
|-----------|------------|------------|------------|
| Capacity, | 25 CC 1-10 | 50 CC 1-10 | 100 CC 1-5 |
|           | \$2 25     | 3 00       | 3 75       |

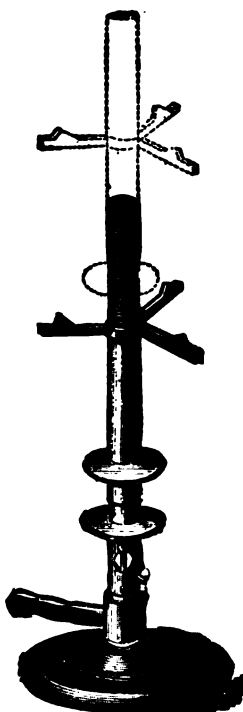
**BURNERS.**

- \* 8659. Burners, Musenke's. Milled ring moves burner tube and regulates air supply..\$1 20  
 \* 8660. Burner, height adjustable, with chimney. For use with spectroscope. .... 1 80  
 \* 8661. Burner, Dr. Vonable's, Gasolene, each..... 1 00  
 \* 8662. Burner, combination Gasolene, each ..... 1 25  
 ○ 8662a. Burner, new E. & A. Gasolene, best and cheapest, each.....50 cts.

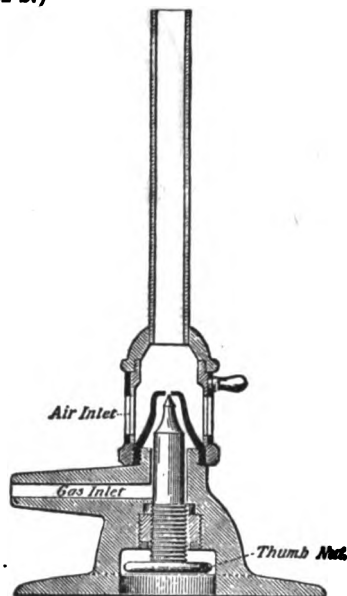
(See out colored page, 282 b.)



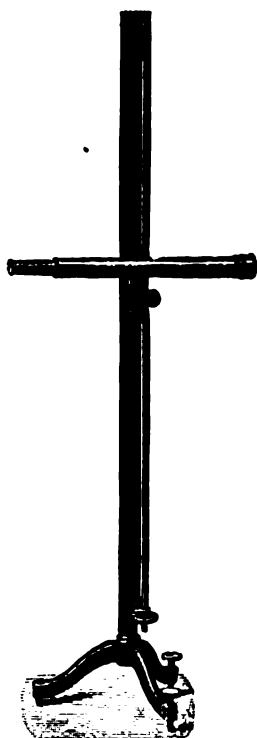
8659



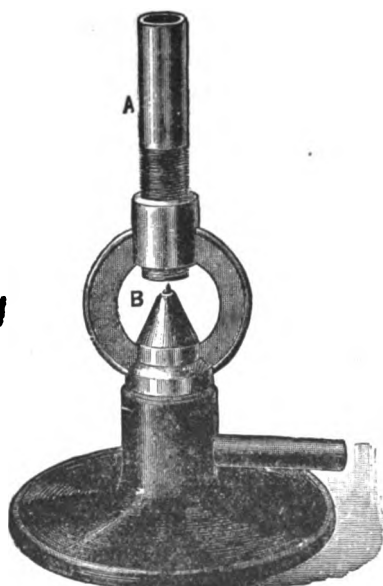
8660



8661



8663



8662

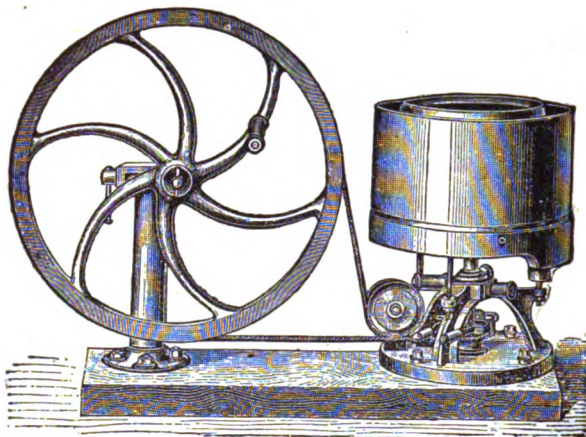
- \* 8663. Cathetometers, with movable telescope and levelling screws..... 45 00  
 — 8664. Ditto, ditto, with millimeter micrometer screw and nonius..... 60 00

**Larger and more complete Cathetometers from \$150 00 to \$1,200 00**

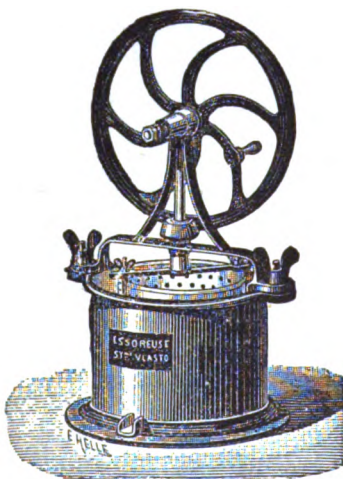
Descriptions and special prices on application.



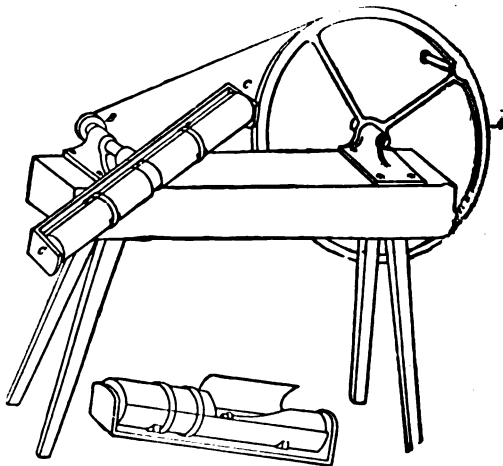
- \* 8665. **Centrifugal Machine**, small, for drying precipitates and salts. Capacity one-half gallon..... 40 00  
 —\* 8666. Ditto, inside cylinder 180×300 m.m. Provided with governor and brake.... 75 00  
 —\* 8667. "Centrifuge" Soxhlet's, operated by hand. Readily adapted for use with power. 30 00  
 ○ 8667a. Ditto, Litten's..... 18 00



8666



8665



8667

## CHARTS.

- 8668. **Technological Wall-Maps**, for Universities and Colleges.  
 Size 170×125 c.m.

- I. Bessemer Steel Manufacturing, by Prof. A. V. Kerpely.
- II. Glover Tower, Manufacturing of Sulph. Acid, by H. Schaffner.
- III. Ammonia Ice Machine, by F. Carré.
- IV. Beer Brewing, by Gustav Noback.
- V. Condensation of Hydrochloric Acid, by H. Schaffner.
- VI. Sugar Refining.
- VII. Diffusion Apparatus, by Julius Robert.
- VIII. Martin Steel Manufacturing, by Siemens.
- IX. Iron Furnace for cokes. Producing from 50 to 60 tons a day.
- X. Puddling Furnace, by Dr. Jos. Schmiedhamer.
- XI. Sulphur Distillation, by Dr. Pasqualini.
- XII. Tile-Making; Hofmann's Ring-Oven... each, \$7 00

Mounted on linen back, each ..... extra, 2 00



# NEW LABORATORY UNIVERSAL CENTRIFUGAL, Machine for Hand and Power.

**No. 8665 A.**

Height, as usually used, 24 inches.  
Height, if raised on legs for heating, 32 inches.  
Width, 24 inches.

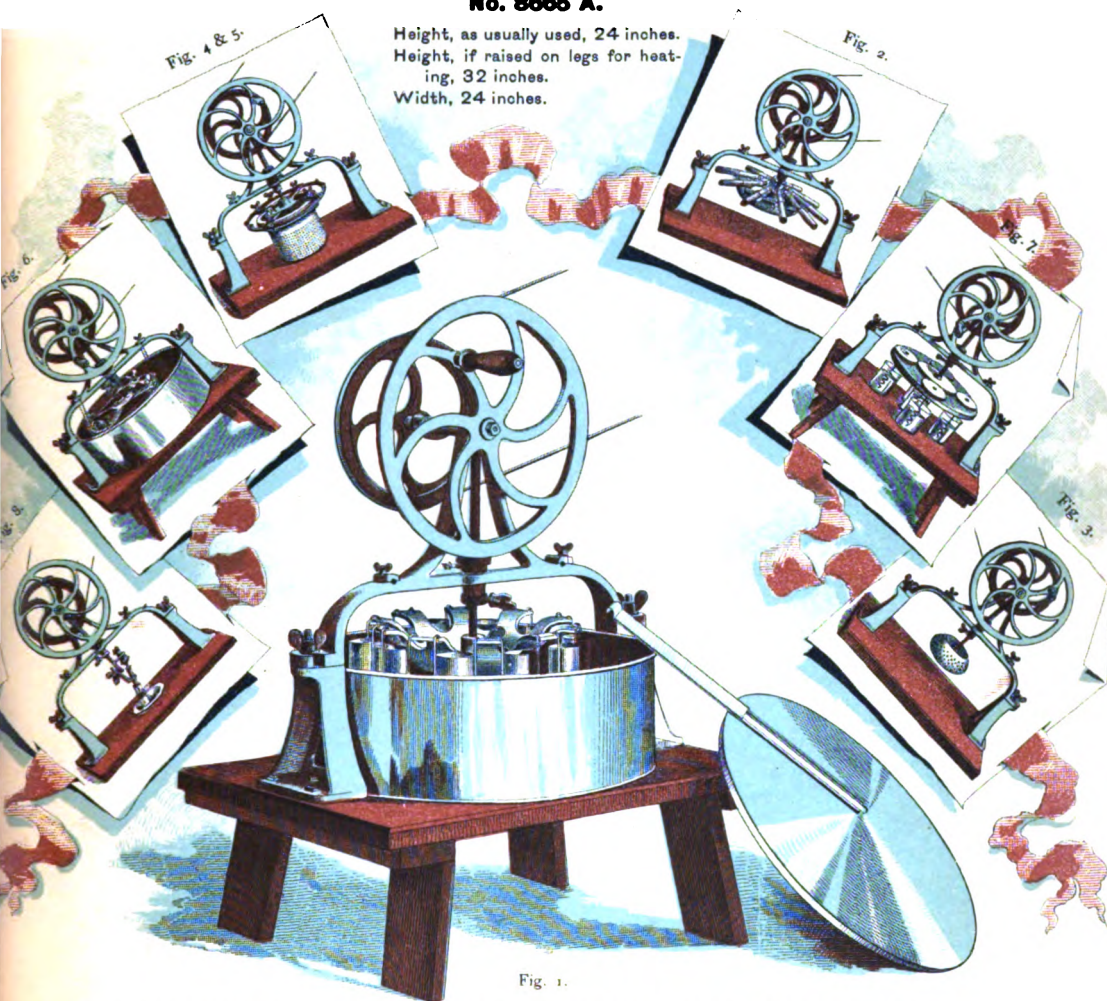


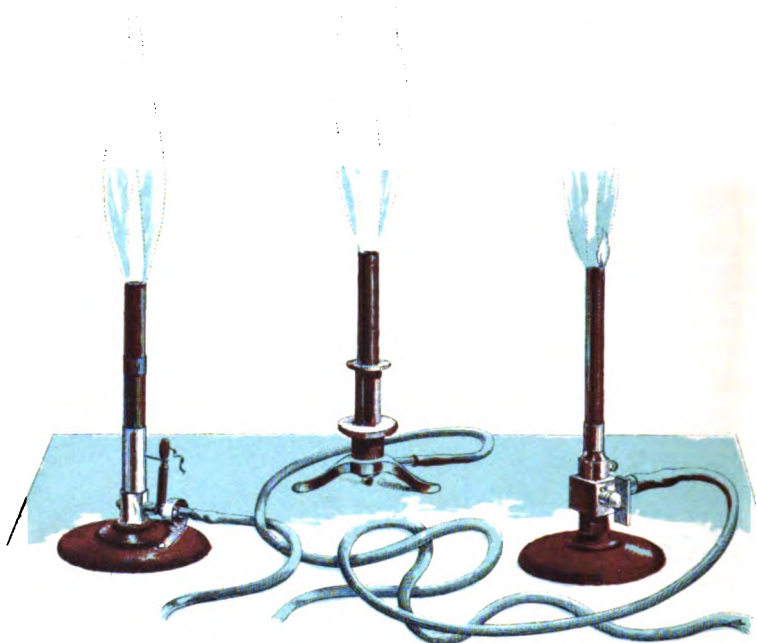
Fig. 1.

PRICE of machine, with 16-inch Copper Nickel plated pan and folding legs, but without attachments,	\$30.00
UNIVERSAL FRAME for 10 bottles, as described below,	2.50
UNIVERSAL FRAME for sieve, etc., as described below,	3.00

## EXTRAS.

Fig. 1. For FAT SEPARATIONS. Set of 10 HOLDERS FOR BABCOCK, Milk Bottles, etc. (For Blood Serum it can be heated by extra Bunsen Burner from below),	\$2.00
Fig. 2. Set of 10 HOLDERS FOR TEST TUBES. Esbach's Albumenometers, etc.,	1.75
Set of 10 HOLDERS FOR FAECULOMETERS. Goetz Phosphor tubes, etc.,	1.50
Fig. 3. Small perforated PORCELAIN VESSEL FOR DRYING chemical salts,	5.00
Fig. 4. Large perforated PORCELAIN VESSEL FOR DRYING chemical salts,	6.00
Fig. 5. CENTRIFUGAL SIEVE. With 5 sets Brass wire gauzes. Mesh 20 to 100,	10.00
Fig. 6. Fitted with eccentric and two stirrups for SHAKING,	1.50
Fig. 7. For STIRRING ATTACHMENT in five beakers. Complete with five centrifugal glass stirrers,	6.00
Fig. 8. Fitted with GRINDING ATTACHMENT, imitating the motion of the hand when grinding; plug cut to suit any size agate mortar,	8.00

This machine is COMPACT, MANIFOLD, and so constructed that ALL PARTS are EASILY ACCESSIBLE. The whole upper part can be removed without trouble.

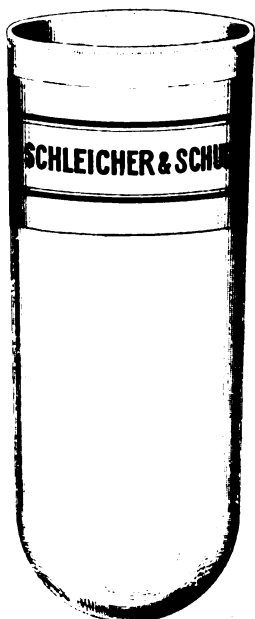


NEW

**No. 8662 A.** Best and least expensive GASOLINE GAS  
BURNER, - - - - - Fifty Cents.

**No. 8662 B.** Prof. L. W. McCay's SAFETY BURNER, flame  
extinguished if it strikes down, - - - - - \$1.50

**No. 5841 A.** Best SIDE FLAME  
LABORATORY BURNER with  
STOPCOCK, - - - - - 1.50



**No. 8819 B.** FAT FREE EXTRAC-  
TION THIMBLE, for Soxhlet,  
Mohr and Knofler's extraction  
apparatus, for Milk and other Fat  
Determinations, in boxes of 25  
thimbles in a box, - - - 2.00  
They are of Messrs. Schleicher  
and Schull's make.

**EIMER & AMEND,**

Digitized by Google *New York City.*

- 8669. Technological wall charts, colored, with explanation by Dr. Friedrich Knappe, size, 100×120 cm.

1. Iron furnace.
2. Grain mill, grinding process.
3. High pressure steam engine, cross section and details.
5. High Pressure steam boiler, view of the interior.
6. Gas oven, cross section.
7. Gas oven, length section.
8. Grain mill.
11. Puddling furnaces.
12. Two Frischöfen.
21. Zinc oven.
23. Beer Brewing, malt roasting.
24. Beer Brewing, mash-box, Hops and Yeast.
31. Lime Kiln.
35. Glass Furnace.
36. Swamp Oven.
37. Salt works, Gradirbau.
38. Salt Works, Boiling Pans.

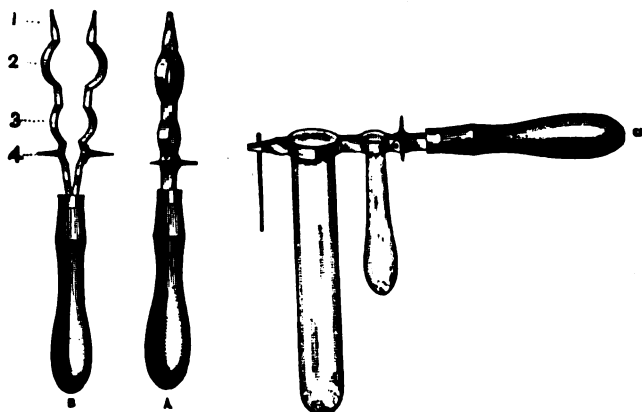
39. Charcoal Kiln.
40. Coke Oven.
41. Manufacture of Sulphuric Acid, lead chamber.
- 42-43. Manufacture of Soda.
44. Steam Hammer.
45. Foundry.
46. Centrifugal Drying Machine.
47. Smoke Apparatus.
48. Coal-washing Apparatus.
50. Cement Oven.
51. Hollander.
52. Gasometer.
53. Ericsson's caloric engine, cross section.
54. Ericsson's caloric engine, details.
- 55-56. Appolt's Coke Furnace.
59. Beer Brewing, mixing machine.
- 60-61-62. Glass manuf'g, stretch furnace.
- 63-64. Water-column machine.

Price of each map, mounted on linen ..... \$4 00

- \* 8670. Clamps.—Universal Test-tube Holder and Tweezer Combined, Dr. Geo. W. Melotte's, (Patented Sept. 20th, 1887.)

This instrument, with or without the handle, will hold *all sizes* of Test Tubes, all sizes and shapes of Matrasses, smaller sizes of flasks, etc., it can be used as a Tweezer and Forceps to pick up and hold securely anything from a pin or pea up to Blowpipe Charcoal, Stoppers, etc., etc.

Prices, Single pieces, 40 cents each; One dozen lot, \$4 00; One hundred lot, \$32 00; Five hundred lot, \$125 00.



8670

## COLLECTIONS.

Arranged by Dr. A. Krantz.

- 8671. Collections of Rocks, according to Rosenbusch. Prepared in two sizes, cut square, small,  $6\frac{1}{2} \times 8\frac{1}{2}$  c.m. Prices, specimens, from ..... 12 cents to 75 cents each  
Large,  $8\frac{1}{2} \times 11$  c.m. Prices, specimens, from ..... 20 cents to \$1 00 each  
Some unusually expensive pieces excepted. Larger collections to order, only.

### Collection Rocks for Schools, etc.

- 8672. Collection, 200 specimens and varieties,  $6\frac{1}{2} \times 8\frac{1}{2}$  c.m. .... \$42 00  
○ 8673. Ditto, ditto, 500 specimens and varieties ..... \$140 00  
○ 8674. Ditto, ditto, 1000 specimens ..... \$250 00

- 8675. **Collection, Minerals, 100 specimens, for students, size about 4×6 c.m.** \$12 00
- 8676. Ditto, ditto, 200 specimens and varieties, packed in 2 wood cases..... \$24 00
- 8677. Ditto, ditto, 500 specimens and varieties, packed in 5 wood cases..... \$146 00
- 8678. Ditto, ditto, 1000 specimens and varieties, loose..... \$360 00

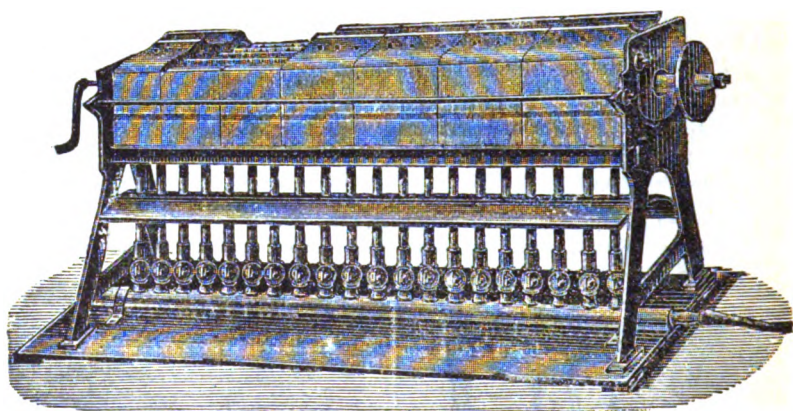
**Minerals for Chemical Analysis, etc., by pound. See our List of Chemicals.**

- 8679. Ditto, ditto, 185 specimens, size 5×6 c.m., illustrating physical properties of the minerals..... \$87 50
- 8680. Ditto, ditto, of Pseudomorphous minerals, 100 specimens, 5×6 c.m. .... \$0 00
- 8681. Ditto, ditto, Metallurgical, of the most important ores and metallic compounds, 200 specimens, 5×6 c.m. .... \$100 00

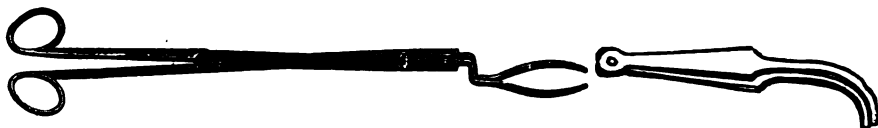
- \* 8682. **Combustion Furnace, Glaser's, modified by Anschütz & Kékulé, improved by E. & A. Provided with mica plates, enabling operator to watch flame during combustion, 31½ inches long, 21 burners.**..... \$40 00

Burners may be removed and used for Kjeldahl's digestions, etc., etc.

Ditto, 37½ inches long, 26 burner..... 50 00



8682



8683

868-5

## CRUCIBLE TONGS.

- \* 8683. **Crucible Tongs, Blair's, with solid platinum tips, each.**..... \$22 50
  - 8684. Ditto, ditto, all finely-finished steel, each..... \$2 50
  - \* 8685. Ditto, ditto, Goose-neck, with platinum shoes..... \$4 50
  - 8686. Ditto, ditto, solid nickel, double bend, 8 inches long, fitted with platinum shoes, more durable than platinum plates ..... \$9 00
  - 8687. **Crucibles, Platinum, Gooch's. Capacity, 15 CC; approximate weight 20 grammes; per gramme.**..... 85c.
- For other sizes Gooch Crucibles, see our large catalogue.
- 8688. Ditto, **Porcelain, Gooch's, with covers, to be used with perforated platinum disc. Capacity, 1 ounce, each.**..... 50c.
  - 8689. **Platinum Disc, for above, each.**..... 75c.
  - 8690. **Perforated porcelain plates, (separate) for above, each.**..... 20c.

For Chemicals, See our Special List.

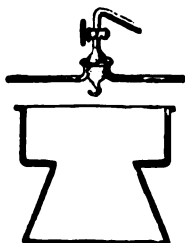
For Drugs, etc., See our Special List.



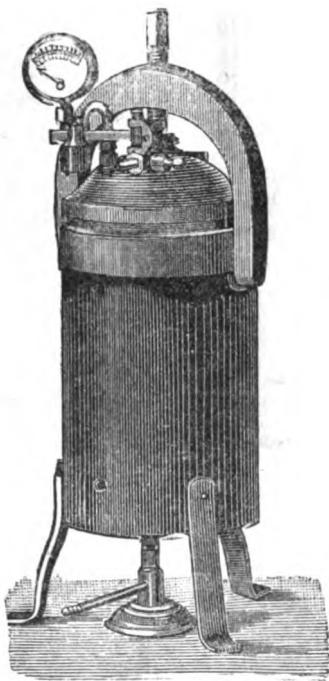
## DESICCATORS.

- \* 8700. Desiccators, Scheibler's, 6 inch diameter, with stop-cock.....: .....\$3 75  
 ○\* 8701. Digestors, Iron, well-made and carefully tested, from 100 to 350 lbs. pressure, per square inch, with gauge and safety valve, complete.

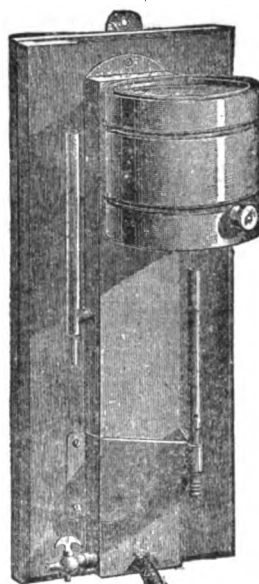
Dimensions,	60×200 m. m.	120×230 m. m.	125×200 m. m.	175×300 m. m.
Capacity,	1 Litre.	1¾ Litres.	3 Litre.	7¼ Litres.
For 25 Atmospheres,	\$50 00	\$55 00	\$62 50	\$75 00
" 50 "	60 00	65 00	70 00	85 00



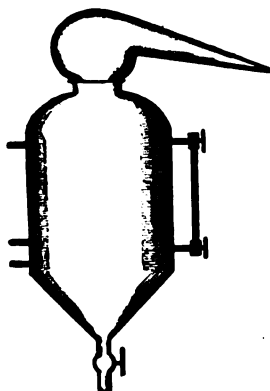
8700



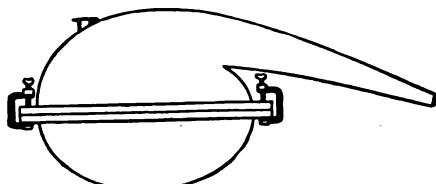
8701



8702



8704

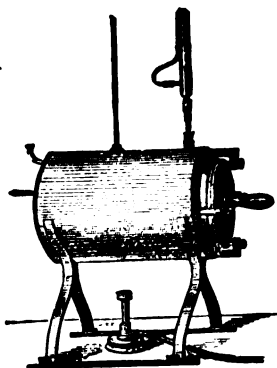


8705

- \* 8702. Distilling Apparatus, perfectly automatic, size A produces 13 gallons of distilled water in 24 hours; burner consumes 6 feet of gas per hour ..... \$15 00  
 ○ 8703. Ditto, ditto, size B produces 32 gallons distilled water in 24 hours; burner consumes 14 feet of gas per hour ..... \$25 00  
 \* 8704. Ditto, ditto, for preparing distilled water by steam heat quickly and in larger quantities. Of heavy copper, steam coil near bottom; automatic valve controlling water supply, water level gauge, etc.  
 Capacity, 3 gallons, \$25 00 5 gallons, \$35 00; condenser extra.  
 \* 8705. Distilling Apparatus of heavy copper, brass flanges, secured by stout clamps, suitable for preparation of Aldehydes, Tars, etc.

Capacity,	½	1	2	3 gallons.
	\$20 00	25 00	30 00	37 50

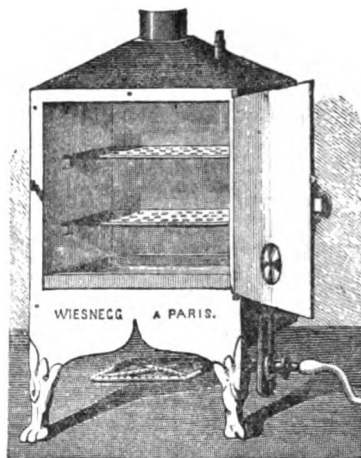
- \* 8706. **Drying Oven**, for drying in current of hydrogen, steam, etc., 16 inches long and 10 inches wide outside, each.....\$20 00
- \* 8707. Ditto, ditto, **Victor Meyers'**, for drying at constant temperatures, mounted on tripod.....\$12 00
- \* 8708. Ditto, ditto, **Wiesnegg's** double wall, **porcelain lined**, inside dimensions, 12 in. x 10 in. x 10 in., with burner, complete.....\$65 00



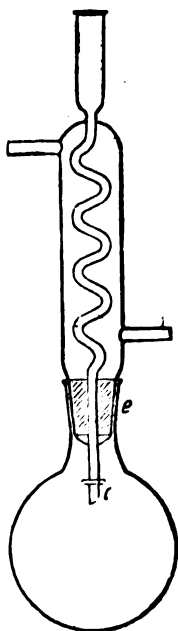
8706



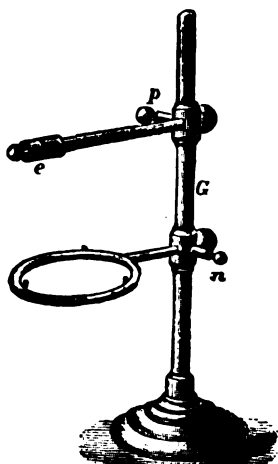
8707



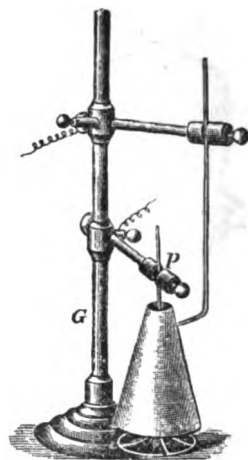
8708



8712



8709



8710

- \* 8709. **Electrolytic Apparatus**, finely-finished, glass rod, ring and clamp.... \$1 00
- \* 8710. Ditto, ditto, with 2 clamps.....\$4 00
- \* 8711. **Electrolytic Apparatus**, modern form, for copper determinations in large copper mills; with 6 or 12 Platinum cylinders or spirals, on insulated support. According to weight of Platinum.....\$60 00 to \$175 00
- \* 8712. **Extraction Apparatus**, all glass, ground joints, modified Soxhlets, each.....\$3 00

**Electrical Apparatus**, see page 327.

**FILTER PAPER.**

**8713. Filter Paper, Schleicher & Schüll's, "Black Ribbon," No. 589, washed.**  
Prepared especially for use in Iron analysis. After incineration the residue of these filters weigh,

Diameter:	5½	7	9	11	12½	15 c.m.
	0,00004	0,00007	0,00011	0,00017	0,00021	0,00025 ashes.

Ditto,	2½	2¾	3½	4½	5	6 inches.
	.60	.70	.90	\$1 10	1 35	1 60 per package.

Originally made for Krupp, and other large German steel works. Packages of 100 filters each.

**8714. Ditto, ditto, Swedish, No. 1 F\* cut, ready for use.**

Diameter,	5½	7	9	11	12½	15	18½ c.m.
	2½	2¾	3½	4½	5	6	7½ inches.
No. 1.	.11	.16	.25	.32	.40	.50	.72 per pack.
No. 2.	.10	.13	.20	.26	.31	.40	.53 " "

**8715 Filter Paper, Schleicher & Schüll's, No. 591, for the filtrations of Lacquers, Oils, Syrups, etc. Size, 21½×23 in. Ream, \$24 00. Quire.....\$1 50**

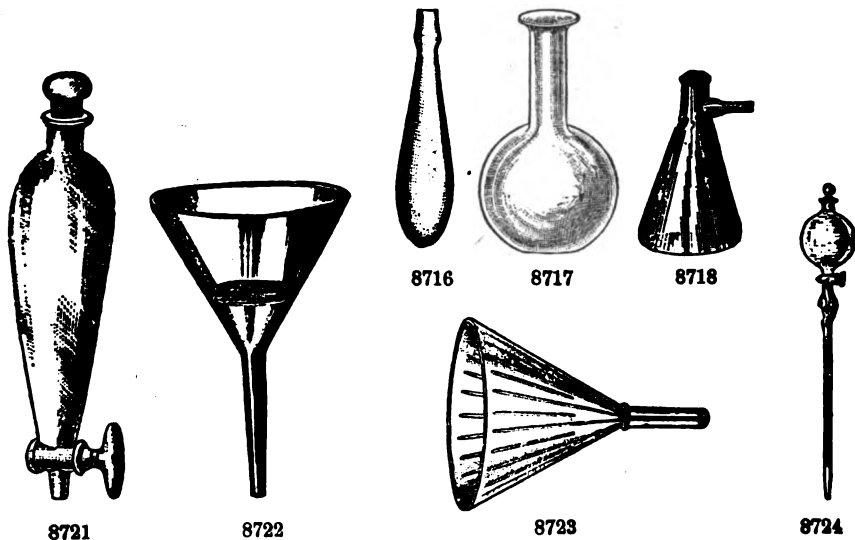
**FLASKS.**

\* **8716. Flasks, Assay, Bohemian glass, capacity, 4 oz., 25c. each, 8 oz., 35c. each.**

\* **8717. Ditto, "Joliet," heavy, capacity 16 ounces. Used extensively in Iron Companies' laboratories, each. . . . .30c. Quart. . . . .45c.**

\* **8718 Ditto, Erlenmeyer form, with side neck, capacity, 8 16 32 ounces each, .35 .45 .60**

\* **8719. Ditto, Bohemian, contracted neck. Imported to order.**

**FUNNELS.**

**8720. Funnels, glass, Bunsen's, ground inside to angle of 60°**  
Diameter, 2½ 3 3½ inches.  
.25 .30 .35 each.

\* **8721. Ditto, separatory, Dr. Squibb's with stop-cocks and stopper.**

Capacity, 4 oz., \$1 25 each. 8 oz., \$2 00. 16 oz., \$2 80

\* **8722. Ditto, Hirsch's porcelain, with fixed perforated porcelain plate.**

Diameter, 2 3 3½ 4 inches.  
.75 .90 \$1 00 1 35 each.

Ditto, Larger sizes, to 9 inch diameter, to order, only.

\* **8723. Ditto, glass, ribbed. Diameter, 3½ 4 5 6 7 8 10 inches.**  
Capacity, 4 8 16 24 32 64 oz. 1 gall.  
.10 .12 .15 .20 .25 .40 .70 each.

\* **8724. Ditto, Dropping, Walter's, for examining single drops, capacity, 60 s.c. each.. \$1 50**

## FURNACES.

- \* 8725. **Furnace, Brown's Assay**, size : 27 inches high, and 14 inches square, size of muffle, 12×6×4 inches, or 10½×5½×3½; weight, 125 lbs.....\$20 00

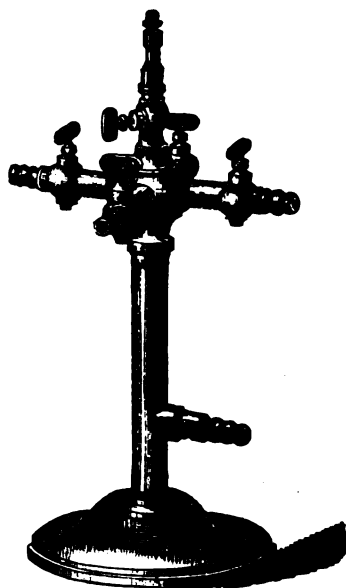
- \* 8726. **Gas Cylinders**, of superior steel, warranted absolutely gas tight and tested to a pressure of 600 lbs. to the square inch. Capacity at a pressure of 225 pounds to square inch, 25 cubic feet. Size, 10 in. diameter×32 in. high, weight, 50 lbs. Price.....\$22 00

- 8727. Ditto, of copper, capacity at 225 lbs. pressure 12 cubic feet, size, 7 in. diameter×28 in. high, weight, 20 lbs. Price.....\$18 00

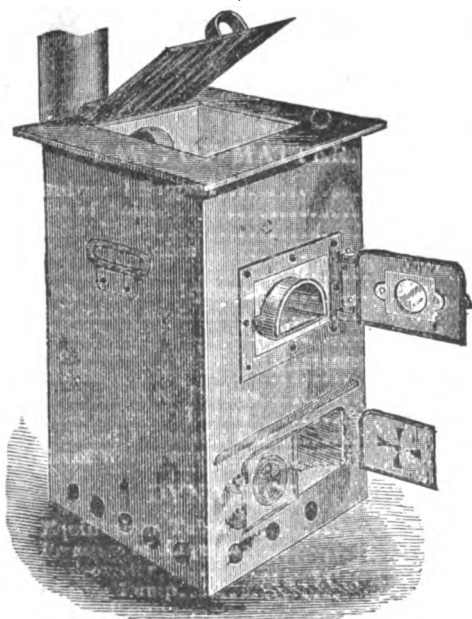
Wrench and couplings furnished with each cylinder.

- \* 8728. **Gas Distributor**, brass, large stop-cocks of 3-8 in. bore, finely finished...\$10 00

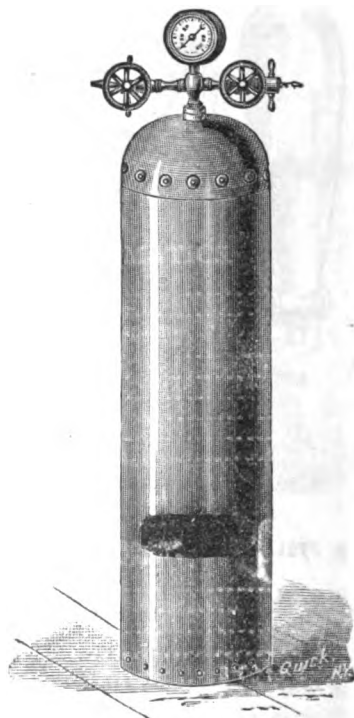
N. B.—Top part for Nos. 8726-27, with gauge....13 00  
Without gauge.....7 00



8728



8725

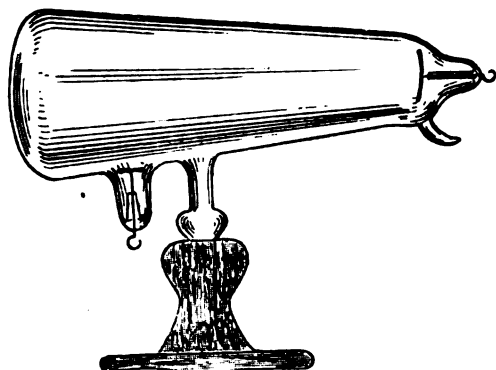


8726 N. B.

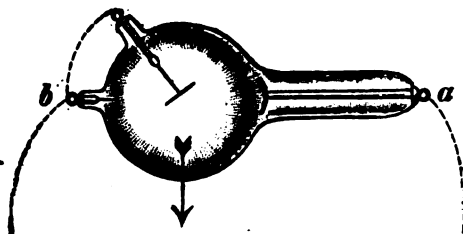


## VACUUM TUBES.

### X-RAY FOCUS TUBES



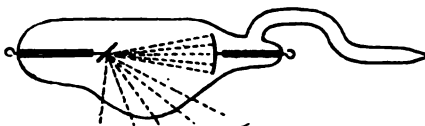
8728a



8728b

8728a. The "Original" Roentgen Tube, pear-shaped, from 10 to 12 inches long, 3 to 4 inches wide, price..... \$9 00

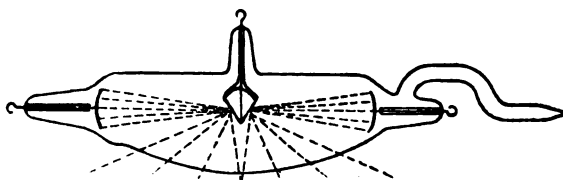
8728b. The "Globe-shaped" Tube, with Platinum reflector.  
 Small, for 3 to 8 inch inductors, price..... \$5 00 to 9 00  
 Medium, for 12 and 16 inch inductors, price..... \$10 00 and 12 00  
 Large, for 20 and 40 inch inductors, price..... 15 00 and 20 00



8728c

8728c The "Standard" Single Focus Tube.

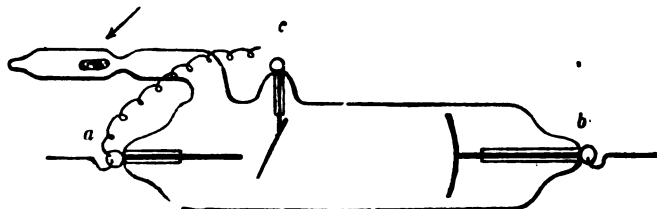
Small .....	\$6 00
Medium .....	8 00
Large .....	10 00



8728d

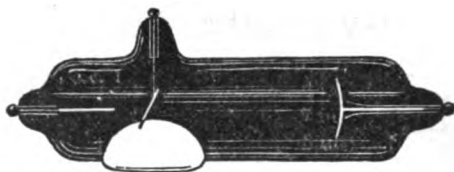
8728d. The "Standard" Double Focus Tube.

Regular .....	\$10 00
Large .....	15 00



8728e

8728e. The "Special" Tube, with adjustable resistance; these tubes can be regulated for inductors of from 10 to 3 inch spark. Price of the tube, made of special glass..... \$8 00



8728f

8728f. Price of the tube, made of manganese glass, with windows, specially adapted for projection experiments with small inductors..... \$10 00

Argon, in spectrum tubes, tube..... 5 00

Helium, in spectrum tubes, tube..... 6 00

## FLUOROSCÉNT SCREENS.

With Barium-Platinum-Cyanide

○	9x12,	13x18,	18x24,	24x30,	30x40,	40x50 cm.
	\$4.00	7.50	12.00	18.00	27.50	45.00

With Tungstate of Calcium.

○	9x12,	13x18,	18x24,	24x30,	30x40,	40x50 cm.
	\$1.75	2.80	4.70	7.50	12.50	22.50

## X-RAY APPARATUS AND ACCESSORIES.

**Edison Battery Set, No. 300, consisting of:**

1 Ruhmkorff Coil, 6 in. spark, with adjustable condenser and vibrator.

1 Edison Fluoroscope, 6 in. x 8 in.

1 Edison X-Ray Focus Tube, medium size.

1 " " " " large

1 Adjustable Stand, for tube.

12 Edison-Lalande Cells, type S, in lead-lined polished oak box.

1 Battery Cord, to connect battery to coil, and 2 insulated wires.

Price, complete, with sliding adjustable Rheostat.....\$170.00

**Edison Set, No. 100, for 3 in. Coil..... 100.00**

**Edison Set, No. 200, " 4 in. Coil..... 125.00**

**" W. S." X-Ray Plant, (Type C.) consisting of:**

1 6 in. spark Willyoung Coil, with "Ideal" Vibrator.

2 Cells "Chloride Accumulator," in portable case.

1 Style A. Bowdoin Focus Tubes.

1 Style B. Bowdoin Focus Tubes.

1 Adjustable Wood Support for Tubes.

1 Fluoroscope, best quality 5x7 in.

1 Connecting Cord with terminals.

Price, complete ..... 152.50

**" W. S." Plant, (Type B,) for 4 in. Coil..... 115.00**

**" W. S." Plant, (Type D,) for 8 in. Coil..... 180.00**

**Max Kohl's Outfit, consisting of:**

1 6 in. Coil with Mercury interrupter.

1 Storage Battery, 6 Cells, 12 Ampere hours capacity.

1 Resistance set with 3 lamps.

1 Book Pole Reagent Paper.

1 Current Regulator.

3 Connecting Cords and 2 g. p. covered wires.

2 New improved Roentgen Tubes.

1 Support for Tubes with Wire holder.

1 Fluoroscope, removable screen 7x10 in.

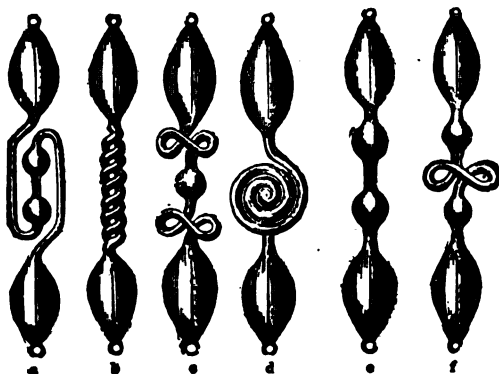
Price for use with storage Battery..... \$40.00

Price for use with arc-light current..... 210.00

Larger outfits, to be used with Coils, up to 24 in. spark, quoted upon application.

## GEISSLER TUBES.

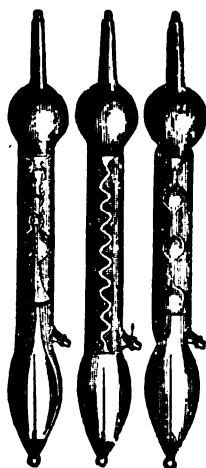
- \* 8729. Geissler Tubes. Length,      4      5      6      8      10      12      20 inches.  
    .40   .50   .60   1.00   1.25   2.00   3.50 each.
- \* 8730. Ditto, ditto, containing fluorescent solutions.  
                  Length,      6      8      10      12      16 inches.  
                                  \$1 00   1 50   2 00   2 50   3 00 each.
- \* 8731. Ditto, ditto, 12 to 15 in. high, each.....\$4 50
- \* 8732. Ditto, ditto, 10 to 12 in. high, spirals of Uranium glass, can be mounted on wood base, each.....\$4 50



8729



8731



8730



8732



8733

\* 8733. Ditto, ditto, filled with various gases for spectrum analysis, selected, each...\$2 50

**Glass-blowing and Engraving by Experts, in our own shops. Graduations warranted correct.**

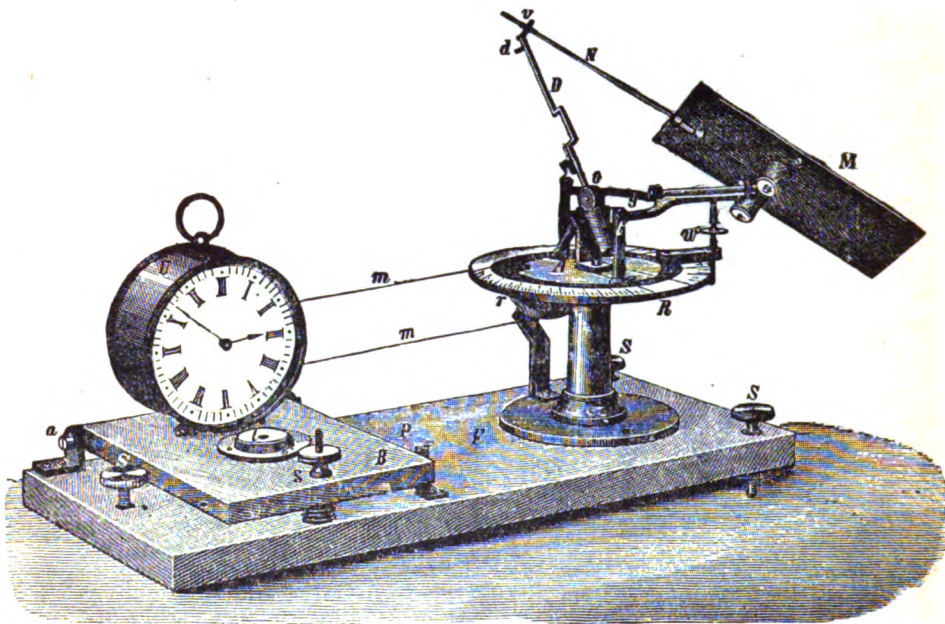
**Metal Work, any description, made in our own shops by experienced mechanics.**

— 8734. Hæmatinometer, Hoppe-Seiler's, for measuring blood corpuscles, pr pair, \$13 50

○ 8734b. Hæmometer, after Fleischl.....\$24 50

## HELIOSTATS.

- 8735. **Heliostat, after Fuess** ..... \$170 00
- 8736. Ditto, with two mirrors, operated by hand, arranged to fasten to shutter.. 79 50  
Slit arrangement for same, extra ..... 9 00
- \* 8737. Ditto, Spencer's with clock-work ..... 60 00
- 8738. Ditto, Meyerstein's, with clock-work ..... 38 00



8737

## HYDROMETERS.

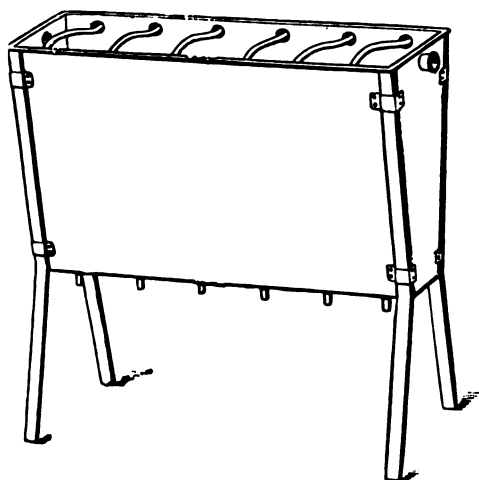
- 8739. **Hydrometers, Standard Sucrose, as made for Drs. Wiley and Spencer.** Arranged in sets of 9, up to 90°, standard quality in 1-10°=0 to 10, 10 to 20, 20 to 30, etc. Each ..... \$1 00 Per set of 9 ..... \$9 00
- 8740. Ditto, for diffusion battery. in sets of 20, in 1-20° standard quality, 0 to 5, 5 to 10, 10 to 15, 15 to 20, 20 to 25, 25 to 30, 30 to 35, 35 to 40, 40 to 45, 45 to 50, 50 to 55, 55 to 60, 60 to 65, 65 to 70, 70 to 75, 75 to 80, 80 to 85, 85 to 90, 90 to 95, 95 to 100, each ..... \$1 50
- 8741. **Machine, for cutting and grinding mineral sections, modern, with every improvement.** Lathe form, foot power, complete ..... \$135 00
- 8742. Ditto, ditto, **operated by hand** ..... \$36 00
- 8743. **Rock Sections, collections, of 20 specimens for students.** Prepared by Prof. Seebach, examined and described by Prof. Zirkel ..... \$12 50
- 8744. Ditto, collection of Petrographic, 150 specimens. Arranged by Prof. Rosenbush. 8½×11cm ..... \$45 00
- 8745. Ditto, collection, 350 specimens, Massive-Volcanic, systematized and prepared after Prof. Rosenbush's "Mikroskopische Physiographie der Massigen Gesteine." Price ..... \$212 50
- 8746. **Paper Pulp, Schleicher & Schull's, washed and purified, convenient for filtering large quantities of liquids, per lb.** ..... 40 cts.
- 8747. **Polarizing Apparatus, Norremberg's, latest form, wide field, with draw-tube, etc** ..... \$88 00
- 8748. **Polarizing Apparatus, after Groth for crystallographic optical investigations, with Stauroscope, Goniometer, Oil-vessel, Heating arrangement, and with all recent improvements, complete** ..... \$375 00

## KJELDAHL'S APPARATUS.

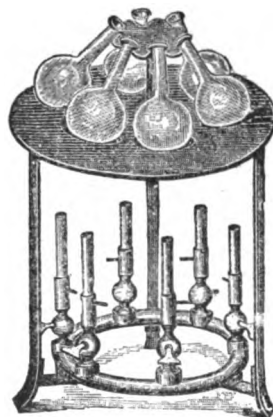
Latest Designs.

For Nitrogen Determination, made by us for Laboratories of Agricultural Experiment Stations, Fertilizer Works, etc.

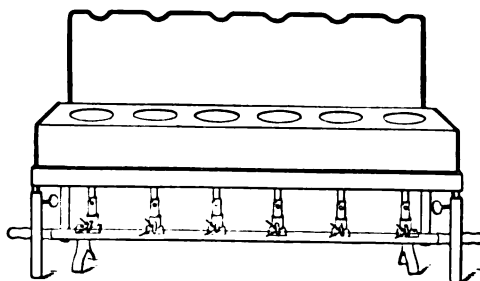
- \* 8749. Kjeldahl's Condenser, copper, tin lined, 6 coils of pure block tin..... 25 00
- 8750. Ditto, ditto, 10 coils..... 45 00
- 8751. Ditto, ditto, of zinc, 6 coils..... 20 00
- \* 8752. Kjeldahl's Digesting Shelf, with 6 burners..... 16 00
- 8753. Ditto, ditto, with 10 burners..... 20 00
- \* 8754. Kjeldahl's Distilling Shelf, with 6 burners..... 16 00
- 8755. Ditto, ditto, 10 burners..... 20 00



8749



8756

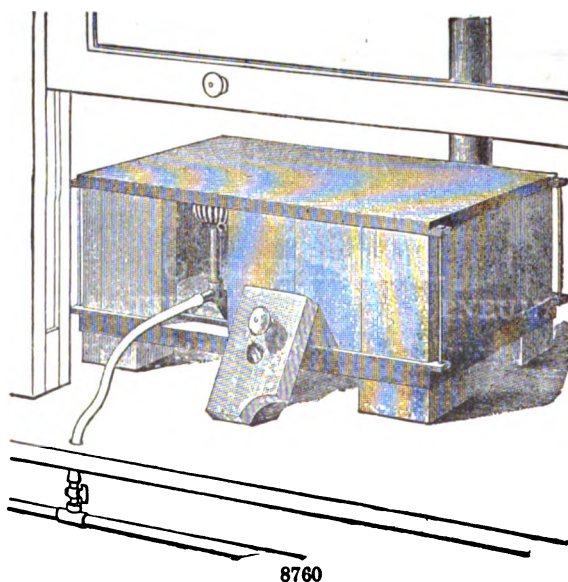
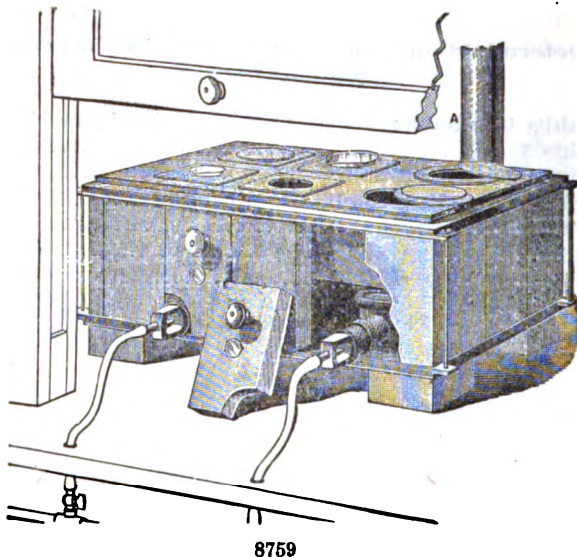


8752-54

- \* 8756. Kjeldahl's Digesting Shelf, round form, 6 burners (See 6167 and 6340)... 16 00
  - 8757. Kjeldahl's Digesting Flasks, Bohemian glass.
  - .40                      .60                      .75                      .85
  - 200                      500                      750                      1000 CC.
  - a—Kjeldahl's Distilling Flasks, 500 CC., 30 cts.
  - b— " Connecting Bulb Tubes, each, small.... 25 cts. Large... 35 cts.
  - 8757a. Kjeldahl's flasks of copper, after Armsby..... \$3 50
  - 8758. Knives, for cutting Glass, each..... 75
- For Jena Glassware see Nos. 9205-9215.

## LABORATORY FIXTURES.

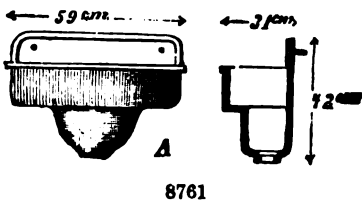
- \* 8759. Air Bath, Blair's, Cast-iron Trough, supported on fire bricks. Top of asbestos board and Sheet-iron..... 30 00



- \* 8760. Sand Bath or Hot Plate, Blair's, Iron Plate, supported on Fire-brick, 25 00

- \* 8761. Basins, of March's famous Stoneware, used extensively abroad. General shape, particularly the shelf, considered a great convenience.....\$14 40

Basins, Iron, porcelain lined. Sizes and prices on application.

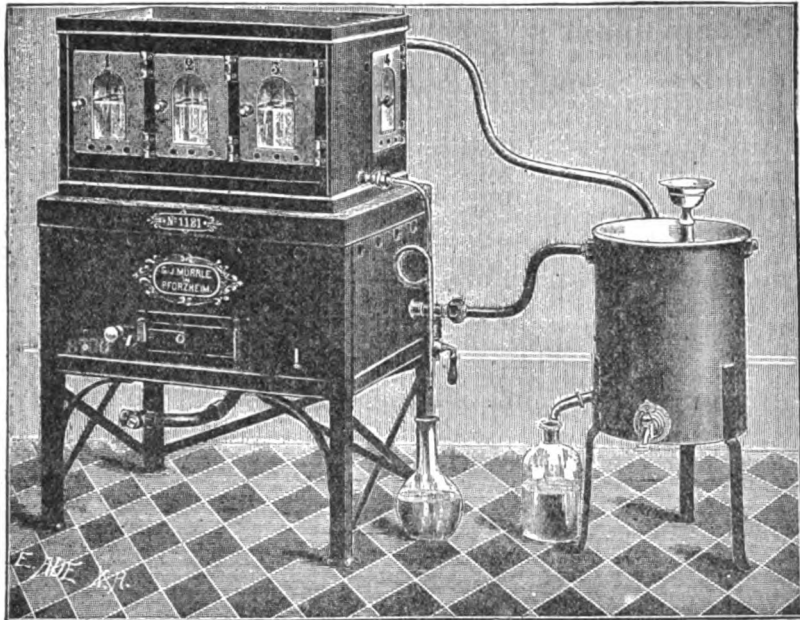


- \* 8762. **Drying Oven.** Double wall, of copper, with heavy brass doors. Boiler and Condenser, for preparing Distilled water. Mounted. Arranged to be used with a large gas burner.....800 00

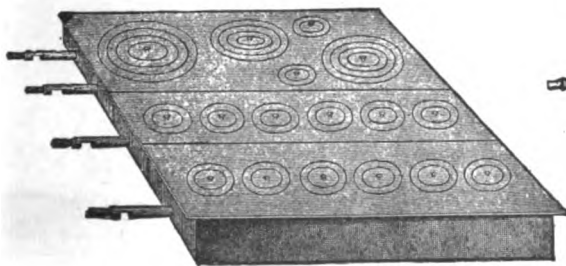
Ditto, larger sizes and different arrangements to order.

\* 8763. **Evaporating Bath, Iron.**

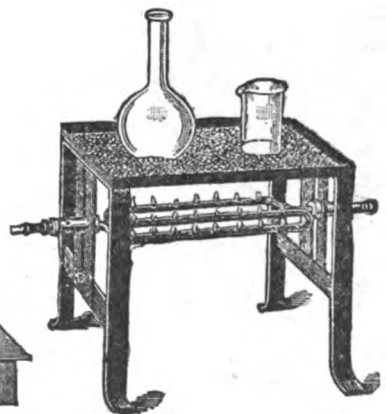
Section with 12 holes.....	40 00
Section with 18 ".....	60 00
Section with 1-12 in. 2-10 in. and 2-4 in. holes.....	40 00



8762



8763



8765

8764. **Kettles, of enameled iron, caldron shaped.**

Capacity,	26 gallons,	40 gallons.
Each,	17 50	25 00

- \* 8765. **Sand Bath, according to Ruedorff, of wrought iron, with 3 row-burners, as per sketch.....** 8 00

**8766. Water Bath, round, for steam, most modern form. Each provided with steam valve and overflow. Set right through table top. No tripod needed.**

	6 in.	8 in.	10 in.
Each,	\$2.75	\$4.00	\$8.00

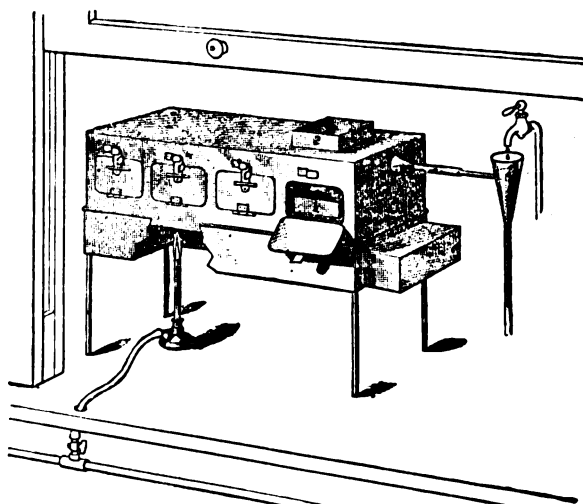
○\* **8767. Water-bath, with 4 openings each, 6 inches deep, 5 inches wide, 2½ in. high, as used by Dr. Blair in analysis of iron ores, provided with water regulator, 25 00**

**8768. Single copper boxes, as used in connection with this bath, 4½×3½ in. each...\$1 50**

○ **8769. Ditto, with larger ovens, arranged to hang on wall, and with openings at top for ventilation, etc..... 35 00**

○\* **8770. Jugs, Gutta Percha, for acids, etc., with stoppers.**

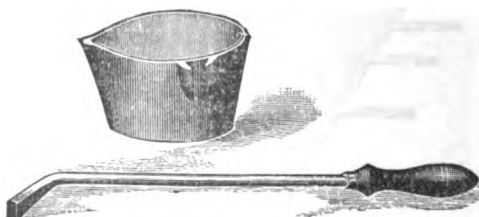
Capacity,	1	2	3	4	5	6	7	8 gallons.
Price,	\$9 00	15 00	19 50	24 00	28 00	32 00	36 00	40 00 each.



8767



8770



8771

○\* **8771. Ladles, with detachable handles.**—Of cast iron, in three sizes, 4½×2½, 4½×2½, 4×2½, inside measurement. One handle will fit any ladle, and can be removed while it is on the fire. The prices of ladles and handles are therefore given separately below.

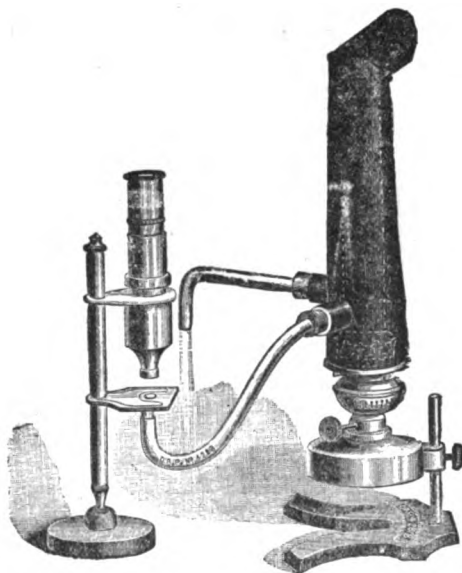
No. 14L, Ladle, 4½×2½ inch.....	40c	No. 14s, Ladle, 4×2½ inch.....	25c
No. 14M, Ladle, 4½×2½ inch.....	35c	No. 14H, Handles, each.....	25c



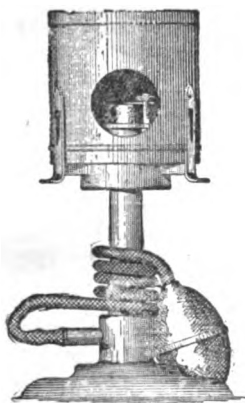
## LAMPS

- C 8772. Microscope Lamp, new, for gas. ....\$10 00  
 — 8772a. Ditto, with Auer von Welsbach incandescent cone.....\$15 00  
 O\* 8773. Ditto, ditto, for oil.....\$6 00

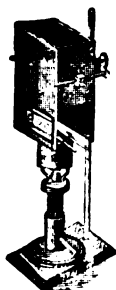
The flame is surrounded by an opaque chimney, and light is transmitted (law of total refraction) through glass rod. Used without condenser above or below stage.



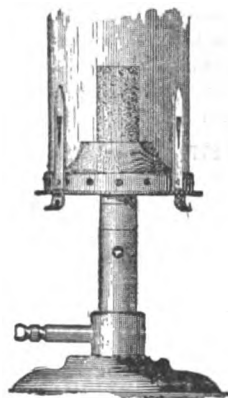
8773



8774



8775



8776

- O\* 8774. Lamps, Magnesium, "flash" .....\$4 00  
 —\* 8775. Lamps, Polariscope, Landolt's improved, for Sodium Light.....\$16 00  
 O\* 8776. Lamp, for Dark Room, gives several times light of ordinary "Ruby" lamp.  
 Complete with wicks, amber chimney, etc. ....\$3 50

## MAGIC LANTERNS.

The prices of Magic Lantern and Stereopticon depend upon the required objectives.

- \* 8777. **Magic Lanterns.** Price, with a first-class  $\frac{1}{4}$  size Achromatic Objective. \$50 00  
 ○\* 8778. **Oxy-Hydrogen Stereopticon.** Price, with first-class  $\frac{1}{4}$  size achromatic objectives. \$125 00

This Stereopticon consists of two well-ventilated tubular lanterns  $4\frac{1}{2}$  in. diameter, made of Russia sheet iron, with all seams folded and riveted, and nicely japanned in imitation of black rubber. With hinged doors at the side and back of each lantern; first quality condensing lenses,  $4\frac{1}{2}$  inch. in diameter; superior achromatic objectives, nicely mounted in brass with rack and pinion adjustment for focusing; improved Oxy-Hydrogen compound jets, warranted to burn entirely noiseless, and new device for regulating the lime cylinders and for adjusting the position of the jets; latest improved dissolving key, warranted not to darken the screen, and arranged to be used with compressed gases direct from cylinders.

This instrument is provided with swing joints, rotating on plated pillars fastened to a walnut base.

The  $\frac{1}{4}$  size objectives will produce a brilliant and well-defined picture of any desired size, up to 25 feet diameter.

- 8779. **Darlot Objectives**, nicely mounted in brass, with rack and pinion adjustment for focusing, can be had in matched pairs.

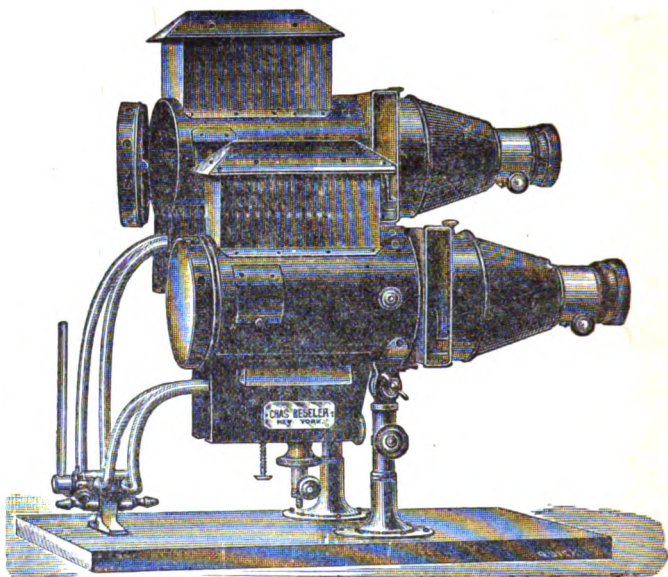
Size, Focus,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Price,	\$7 00	12 00	14 50	21 00	32 00

- 8780. **Magic Lantern Condensers.**

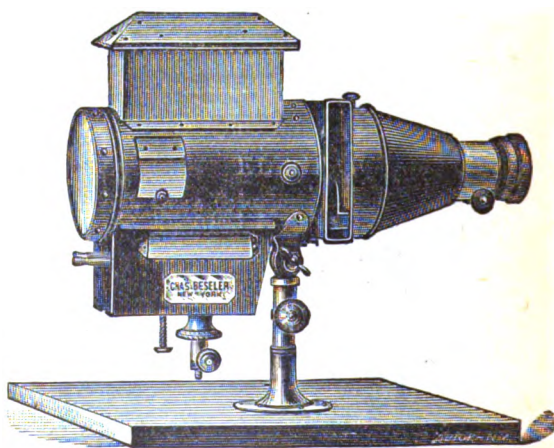
4 in. diameter. ....	\$2 50	$4\frac{1}{2}$ in. diameter. ....	\$3 00
5 in. diameter. ....			\$3 75

The following table of sizes and distances will be found useful.

Size Objective.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$4-4$	$4-4$
Distance,	14	20	36	50	50	60	57	64	80	100 feet.
Gives a	7	10	12	19	14	17 $\frac{1}{2}$	15	17	16	23 ft. picture.



8778



8777

# MICROSCOPES.

## Microscopes, Objectives and Accessories,

Manufactured by CARL ZEISS, JENA.

EIMER & AMEND, SOLE AGENTS.

*The Zeiss' Objectives, Achromatic and Apochromatic, the Stands and Accessories, are so well-known for their unsurpassed excellency that it is needless to say more about them here. We quote wholesale prices, duty paid.*

**Outfits for most scientific purposes, and especially for the Investigation of Bacteria.**

○\* 8781. **Microscope, Stand Ia** with solid plain vulcanite stage.....\$130 00  
With large mechanical stage.....\$160 00

**Apochromatic Objectives.** 16,0 mm 8,0 mm 4,0 mm  
0.30 n. ap. 0.65 n. ap. 0.95 n. ap. \$128 00

2,5 mm., Water immersion.

1.25 n. ap. ....\$100 00

2,0 mm 3,0 mm., Homog. immersion.

1.30 n. ap 1.40 n. ap .....\$280 00

**Compensating Eye-pieces.** 2, 4, 8, 12.....\$40 00

6, with Micrometer .....\$12 00

**Sliding Objective Changer,** with 6 slides, in case. Rec. in place  
of nose-pieces .....\$30 00

**Stage Micrometer**.....\$1 00

**Camera lucida,** (after Abbé).....\$10 00

Total for outfit.....\$734 00

○ 8782. **Microscope,** photo microscopic stand, with iris diaphragm and swing  
out condenser.. .....\$160 00

**Apochromatic Objectives.** 16,0 mm 8,0 mm 4,0 mm  
0.30 n. ap. 0.65 n. ap. 0.95 n. ap. \$128 00

2,5 mm. Water immersion.

1.25 n. ap. ....\$100 00

2,0 mm. Homog. immersion. 1.30 n. ap.....\$120 00

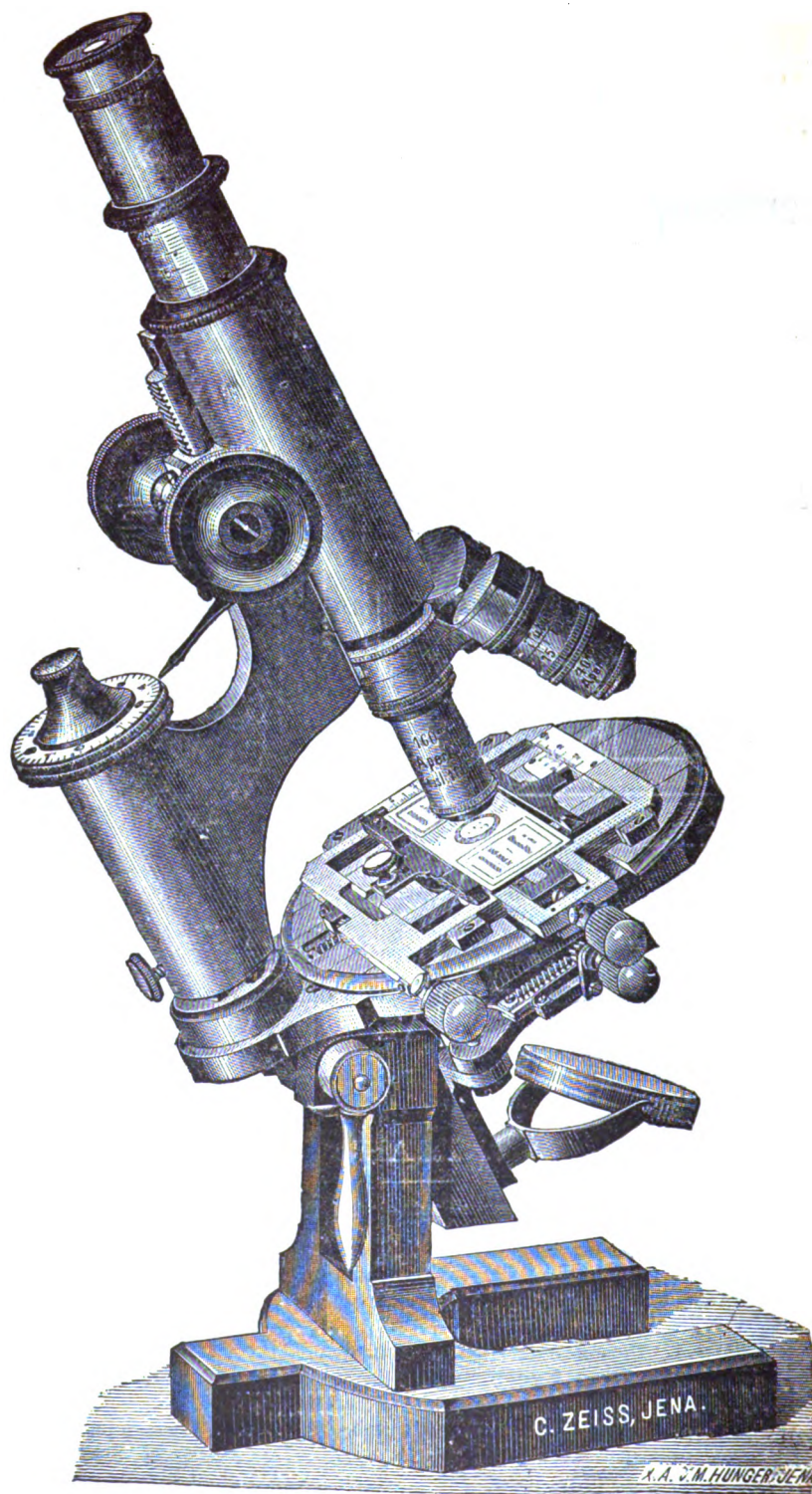
**Compensation Eye-pieces.** 2, 4, 8, 12 ... \$40 00

6, with Micrometer.....\$12 00

**Sliding Objective Changer,** with 5 slides, in case. Rec. in place of  
nose-pieces .....\$26 00

**Camera lucida,** (after Abbé).....\$10 00

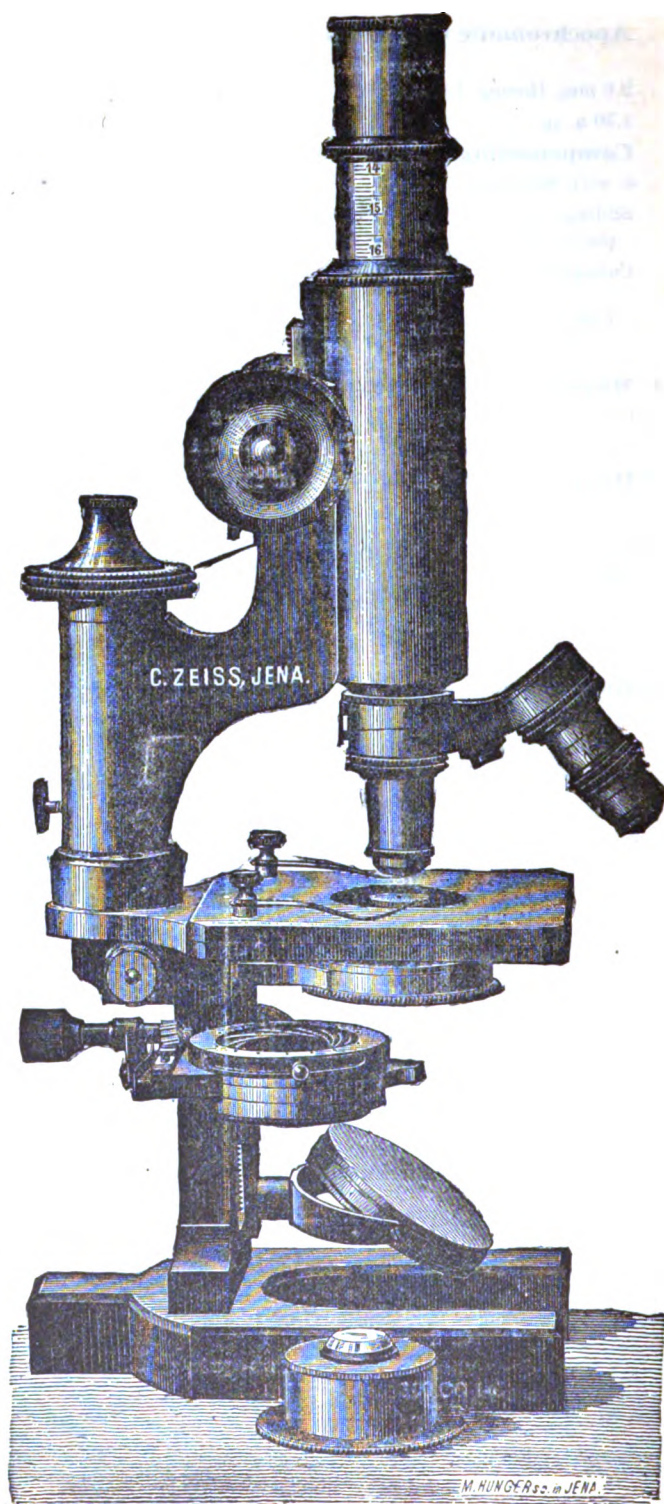
Total for outfit.....\$596 00



8\*81

- 8783. **Microscope, Stand IIa**, with swing out condenser.....\$126 00  
**Apochromatic Objectives.** 16,0 mm 8,0 mm 4,0 mm.  
0.30 n. ap. 0.65 n. ap. 0.95 n. ap. \$128 00  
2,0 mm, Homog. Immersion.  
1.30 n. ap.....\$120 00  
**Compensating Eye-pieces.** 2, 4, 8, 12.....\$40 00  
6, with Micrometer.....\$12 00  
Sliding Objective Changer, with 3 slides, in case. Rec. in place of nose-  
pieces. Price.....\$14 40  
Camera lucida, (Abbe's Condenser).....\$10 00  
Total for outfit.....\$450 40
- 8784. **Microscope, Stand IIa**.....\$116 00  
Objectives, A, C, E.....\$50 40  
1-12 (Homog. immersion).....\$64 00  
**Huyghenian Eye-pieces.** 2, 4.....\$5 60  
3, with Micrometer.....\$4 80  
Nose-piece for 2 objectives.....\$8 00  
Camera lucida, 2 prisms.....\$8 40  
Total for outfit.....\$257 20
- 8785. **Microscope, Stand IVa**, with Iris Diaphragm and Abbé Illumina-  
ting Apparatus No. 17.....\$100 00  
**Objectives,** a, A, D, F.....\$64 80  
1-12 (Homog. immersion).....\$64 00  
**Huyghenian Eye-pieces,** 2, 4.....\$5 60  
3, with Micrometer.....\$4 80  
Nose-pieces for 3 objectives.....\$10 80  
Camera lucida, 2 prisms.....\$8 40  
Total for outfit.....\$258 40
- \* 8786. **Microscope, Stand IVa**.....\$100 00  
Objectives, A, C, E.....\$50 40  
1-12 Homog. immersion.....\$64 00  
**Huyghenian Eye-pieces,** 2, 4.....\$5 60  
**Eye-piece Micrometer**.....\$2 00  
Nose-piece, for 3 objectives.....\$10 80  
Total for outfit.....\$232 80
- 8787. **Microscope, Stand VIa**.....\$42 00  
Objectives, A, D.....\$26 40  
1,12 (Homog. immersion 1,20 mm. ap.).....\$64 00  
Huyghenian eye-pieces, 2, 4.....\$5 00  
Nose-piece, for 3 objectives.....\$10 80  
Total for outfit.....\$148 80





8786

- \* 8788. **Microscope, Stand VII, with Illuminator. No. 19 and Iris diaphragm** .....\$40 80  
 Objectives, A, D.....\$26 40  
 1-12 (Homog. immersion, 1,20 mm aperture).....\$64 00  
 Huyghenian Eye-pieces, 2, 4.....\$5 60  
 Total for outfit.....\$136 80
- 8789. **Microscope, Stand VII, \$32 00**  
 Objectives, A, D, F.....\$60 00  
 Huyghenian Eye-pieces, 2, 4...\$5 60  
 Total for outfit.....\$97 60
- 8790. **Microscope, Stand VII, \$32 00**  
 Objectives, A, D.....\$26 40  
 Huyghenian Eye-pieces, 2, 4...\$5 60  
 Total for outfit.....\$64 00

### ZEISS' APOCHROMATIC OBJECTIVES.

In the construction of the objectives thus designated, new kinds of glass and a greatly improved method of correction have been employed, with the result that the secondary spectrum is removed and the spherical aberration uniformly corrected for the different parts of the spectrum. There is therefore a much more perfect concentration of the rays in the image than with the best objectives hitherto made, and there is neither focal difference nor spherical aberration even in the case of chemically effective rays.

They also allow very high eye-pieces to be used without detriment to the accuracy or brightness of the image, thus giving high magnifying power with relatively long focal length, and enabling a series of very varying amplifications to be obtained with the same objective.

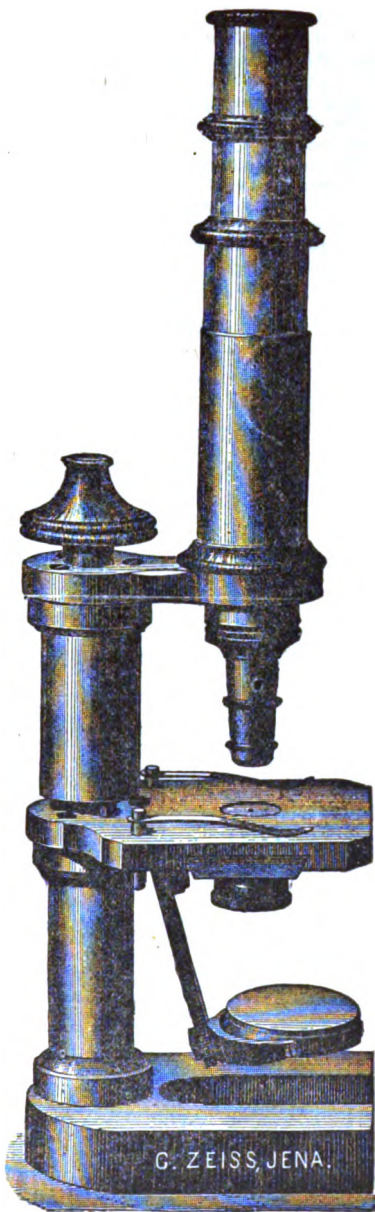
The natural color of objects, even in the more delicate tints, are reproduced unaltered by these objectives in consequence of the very slight intensity of the residual tertiary spectrum.

The differences in the amplification of the image for the various colors are reduced to the same amount in all the objectives, and are removed by the compensating eye-pieces hereafter described. The images therefore are uniformly free from color throughout the whole field of view.

The spherical aberration outside the axis is so completely corrected that the sharpness of image existing in the centre of the field of view is maintained almost up to the margin although the focal adjustment between the centre and margin is necessarily somewhat different in consequence of the unavoidable curvature of the surface of the image.

The construction of each objective is based on calculations which extend to the smallest details of optical action. Every element—radii of curvature, thickness, diameter and distance of the lenses from one another—in relation to the spectro-metrical constants of the various kinds of glass employed and the numerous conditions, which have to be simultaneously fulfilled, are all accurately adjusted and numerically determined for each objective. The technical execution is carried out exactly on the data furnished by these calculations, with the strictest check on all the elements in the various stages of manufacture and without any subsequent empirical touching up.

In the list given below the objectives are arranged according to their aperture. In the 2d column are the different focal lengths while the 3d column gives the corresponding proper



8788

amplification of the objective (the quotient of the conventional distance of distinct vision (250 mm) divided by the focal length of the objective).

The objectives are constructed according to order, either for the continental tube-length of 160 mm or for the English of 250 mm or 10 inches. The tube-length is measured from the upper surface of the setting of the objective to the upper margin of the body tube on which the eye-piece rests.

Great care must be taken to preserve the correct tube-length, as any deviation materially injures the performance of the objectives and particularly those for homogeneous immersion.

The settings of all the objectives are engraved with the name of the firm and also with the aperture, focal length, and length of the body tube for which they are adjusted.

In ordering, it is desirable that these three points should be specified so as to avoid any mistake as to the particular objective required (thus: Apochrom. 1.40—3.0 mm—long tube).

The apertures given are the guaranteed minimum values; the real amount is nearly always higher. The focal lengths are exactly as stated.

○ 8791.

### ZEISS' APOCHROMATIC OBJECTIVES.

	Numerical Aperture.	Equivalent Focal Length in mm.	Objective Magnification in mm.	PRICE.
Dry	0.30	16.0	15.5	\$32.00
	0.65	8.0	31	40.00
	0.95	4.0	63	56.00 With Correction
Water Immersion	1.25	2.5	100	100.00 With Correction
Homogene Immersion	1.30	3.0 2.0	83 125	120.00 120.00
	1.40	3.0 2.0	83 125	160.00 160.00
Monobromide of Naphthaline Immersion.	1.60	2.50	100	320.00

### LIST OF ZEISS' ACHROMATIC OBJECTIVES.

Designation.	Numerical Aperture and Air Angle.	Equivalent Focal Length.	PRICE	
			Without Correction.	With Correction.
Dry	a <sub>1</sub>	40 mm	\$4.80	
	a <sub>2</sub>	35 mm	4.80	
	a <sub>3</sub>	30 mm	4.80	
	a*	38-26 mm	16.00	
	aa	0.17	26 mm	10.80
	A	0.20	18 mm	9.60
	AA	0.30	18 mm	12.00
	B	0.35	12 mm	12.00
	C	0.40	7 mm	11.40
	D	0.63	4.3 mm	16.80
	DD	0.85	4.3 mm	21.60
	E	0.85	2.7 mm	26.40
Water Immersion	D*	0.75	4.3 mm	30.00
do	H	1.15-1.20	2.4 mm	44.00
do	J		1.8 mm	57.60
Homog. Immersion	1 <sub>19</sub>	1.25	2.0 mm	64.00



## TABLE OF MAGNIFYING POWER

of the Zeiss' Objectives with several Huyghenian  
Eye-pieces,

and with a body-length of 160<sup>mm</sup>.

Eye-pieces :	1	2	3	4	5	
a <sub>1</sub>	7	10	15	20	...	a <sub>1</sub>
a <sub>2</sub>	11	16	23	30		a <sub>2</sub>
a <sub>3</sub>	20	30	40	50	....	a <sub>3</sub>
a*	4-8	7-14	10-20	15-30	....	a*
aa	25	35	50	60	80	aa
A, AA	37	50	70	90	115	A, AA
B	60	85	115	145	185	B
C	105	145	200	265	325	C
D, DD, D'	175	240	325	420	540	D, DD, D'
E	280	390	535	650	865	E
F	415	585	790	1060	1275	F
H	320	440	610	770	985	H
J	430	585	810	1030	1315	J
$\frac{1}{12}$	385	530	730	950	1180	$\frac{1}{12}$
	1	2	3	4	5	

## ZEISS' MICROSCOPIC ACCESSORIES.

8800. Camera Lucida, Abbe's .....\$10 00  
 8800a. Ditto, improved, the prism case together with the mirror may be swung back round a horizontal pivot ..... \$14 00  
 8801. Condenser, Abbe's, sub-stage, with Iris Diaphragm .....\$22 00  
 8802. Nose-piece for two objectives ..... 8 00  
 8803. Ditto, for 3 objectives ..... \$10 80  
 8804. Polarizing Arrangement, for use with Abbe condenser, analyzer after Hartnack, with divided circle to the analyzer. ....\$22 00  
 8805. Stage Screw Micrometer, for the exact measurement of objects too large to be included in one visual field. The divisions on drum-head read to : 0,002 mm. Whole turns of screw are indicated on a dial. The screw measures up to 10 mm. Arranged to fix on stage of larger stands..... \$48 00  
 8806. Stage Micrometer, one millim, divided into 100 parts, on a glass slip. In case..... \$4 00  
 8806a. Ditto, ten millim., the last being divided in tenths .....\$2 40  
 8807. Eye-Piece Micrometer, 5 millim., divided into 50 parts, with figures. To drop into eye-piece .....\$2 00

## COMPENSATING EYE-PIECES.

The setting of the eye-pieces is so arranged that the lower focal point of all numbers in each series lies in the same plane when inserted in the body-tube. No alteration of focus is therefore required on changing the eye-piece, and the "optical tube-length" (i. e. the distance between the upper focal point of the Objective and the lower one of the eye-piece), which is the standard factor for the magnifying power, remains constant. This optical tube-length in the continental microscopes (excluding small differences between the various objectives) is 180 mm., provided that the length of the body, from the screw-collar of the objective to the upper end of the tube on which the eye-pieces rest, is 160 mm.

The eye-pieces of extremely low power designated as *Searchers* serve the purpose of reducing to its lowest limits the available magnification with each objective, thereby facilitating the preliminary examination and the labour of searching for particular points with high powers. Thus No. 1 of this series enables an objective to be employed with its own initial magnifying power, i. e. as if it were used as a simple lens without an eye-piece. They will be found of special service with immersion objectives, where great inconvenience is caused by having to change a lens already adjusted for another of lower power.

The working eye-pieces for regular observation beginning with a magnification of 4 are likewise of entirely new construction and may be used with advantage even in the highest numbers. The eye-point in all lies so high above the eye-lens and the diameter of the lens itself is so large, that the usual inconveniences attending the use of eye-pieces of short focus are entirely obviated.

Owing to the uniform position of the eye-points of the compensating eye-pieces any one of these may, without difficulty, be used with the usual drawing prisms, including, in particular, the *Abbe Camera*. The most appropriate for the purpose are naturally the lower powers 4 and 6.

The numeration of these eye-pieces is carried out on the principle suggested by Prof. *Abbe*. The number which denotes how many times an eye-piece, when used with a given tube-length, increases the initial magnifying power of the objective, affords the proper measure of the eye-piece magnification and, at the same time, furnishes the figures for rational numeration. On this basis the series of our compensating eye-pieces is arranged according to their magnifying powers, which are respectively 1, 2, 4, 6, 8, 12, 18, and these figures likewise serve as their designation.

The magnification obtained by combining a compensating eye-piece with any apochromatic objective is arrived at directly by multiplying its number by the initial magnification of the objective as given in the preceding table. An objective of 3.0 mm focus for example yields in itself a magnification of 83.3 (calculated for a conventional distance of vision of 250 mm); eye-piece 12 therefore gives with this objective  $12 \times 83.3 = 1000$ .

An order for eye-pieces to be used on stands which are not of our make should be accompanied by an exact impression of the edge of the tube in sealing-wax or some other exact gauge of the internal diameter of the tube; the best gauge, will, in all cases, be the tube itself.

○ List of Compensating Eye-pieces, for the continental tube.

	Searcher Eye-piece.			Working Eye-pieces.			
Eye-piece Number .....	2	4	4*	6	8	12	18
Equivalent focal length in mm. . .	90	45	45	30	22.5	15	10
Price. ....	\$8.00	8.00	18.00	8.00	12.00	12.00	10.00

Table of Magnifications of the Apochromatic Objectives with the Compensating Eye-pieces.

For an image distance of 250 mm. = 10 inch.

Focus of the Objective.	Searcher Eye-pieces	Working Eye-pieces.				
	2	4	6	8	12	18
24.0. ....	21	42		83	125	187
18.0. ....	31	62	94	125	187	281
12.0. ....	42	83		167	250	375
8.0. ....	62	125	187	250	375	562
6.0. ....	83	167		333	500	750
4.0. ....	125	250	372	500	750	1125
3.0. ....	167	333	498	667	1000	1500
2.5. ....	200	400	600	800	1200	1800
2.0. ....	250	500	750	1000	1500	2250
1.5. ....	333	667	1000	1334	2000	3000

## PROJECTION EYE-PIECES.

These are used for projecting the image formed by the objective on a screen for demonstrating purposes or upon a photographic plate. They consist of a convex lens and a compound system, which is most carefully corrected both spherically and chromatically after the principle of apochromatic lenses, and is entirely free from secondary chromatic aberration and from *difference of focus between the visual and chemical rays*. A diaphragm is placed between the lenses for limiting the field, and the compound lens can be made to approach or recede from this diaphragm. The cap of the projection eye-piece forms a diaphragm by which internal reflexion in the body-tube is entirely obviated. The aperture of this diaphragm is made to correspond with the greatest aperture of the apochromatic lenses.

The projection eye-pieces are specially corrected for our apochromatic lenses on the principle of the compensating series, but *may, nevertheless, be advantageously employed with ordinary achromatic lenses of large aperture.*

The designation of these eye-pieces corresponds, as in the case of the other compensating eye-pieces, to those amplifications which they would yield (magnifications being measured after the same principle as for the other compensating eye-pieces) if used for ocular observation.

The magnifications are 2 and 4 for the 160 mm. tube.

We do not construct projection oculars yielding higher amplifications beyond those indicated as these would not possess any practical advantage over the ordinary compensating eye-pieces, which can be used when higher amplifications are required.

The magnification for any distance of image from the eye-piece is obtained, by dividing this distance, expressed in millimeters, by the focal length of the objective in use and multiplying the result by the number of the projection eye-piece employed. Thus the objective of 3 mm. gives with the projection eye-piece 2 an image magnified 1000 times at a distance of 150 cm., for

$$\frac{1500}{3} \times 2 = 1000.$$

This rule holds good, strictly speaking, for long distances only; for short distances the figure so obtained is in excess of the true value.

The image distance may be reduced in the case of 2 to about 200 mm. and with 4 to about 120 mm. (reckoning from the eye-piece); it may, however, be increased to any desired length.

**Price of the Projection Eye-pieces:** No. 2, \$16.00; 2\*, 24.00; No. 4, 16.00.

## HUYGHENIAN EYE-PIECES.

We supply these for use with the ordinary achromatic objectives. Their focal lengths and magnifications are shown in the following table.

Eye-piece No.....	1.....	2.....	3.....	4.....	5.....
Focus in mm.....	50.....	40.....	30.....	25.....	20.....
(Eye-piece) magnification.....	3.....	4.....	5.5.....	7.....	9.....
Price.....	\$2.80 each.				

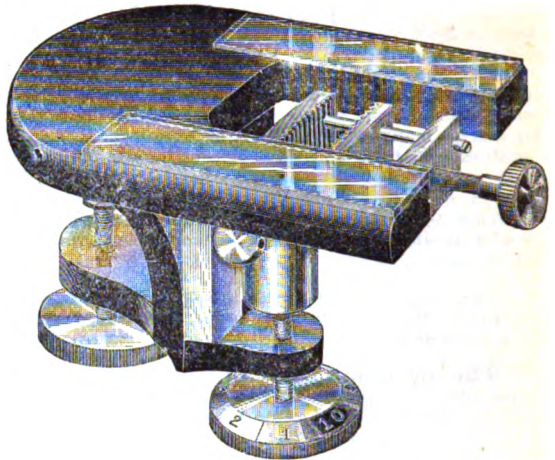
The magnification is computed by the same rule as in the compensating series, the varying position of their lower focal planes being, however, taken into consideration.

With regard to the selection of eye-pieces for a microscope we would remark, that all our achromatic objectives are capable of still giving effective magnifications for regular observation with Ocular 4, good illumination being understood in the case of the highest powers.

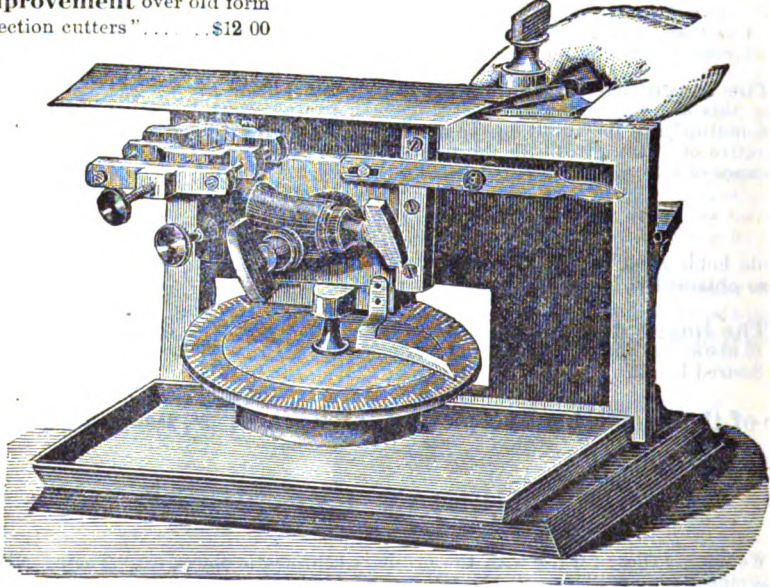
We no longer supply the "orthoscopic" eye-pieces of former catalogues, as they are greatly inferior to the compensating and projecting oculars.

## MICROTOMES.

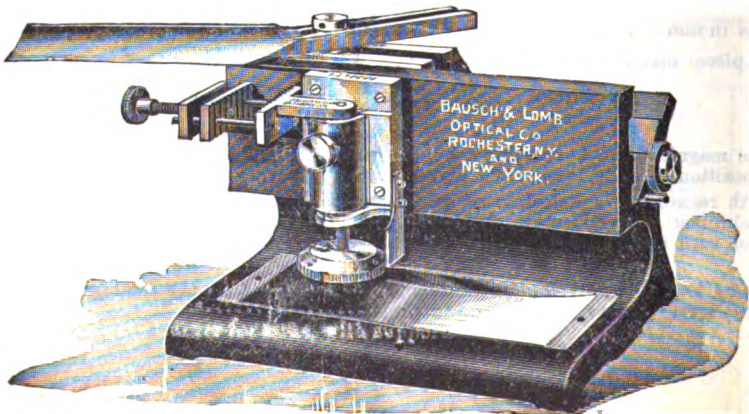
- \* 8808. **Microtome, improv'd** system, Schanze-Weigert. Object may be cut in any position. Complete with 2 clamps, paraffine table and freezing apparatus. Length of razor course, 17 cm., snap arrangement, without knife, in case ..... \$54.00
- 9809. Ditto, ditto, length of razor course, 20 cm., com. \$59.50
- 8810. Ditto, ditto, length of razor course, 30 cm., com. \$89.00
- 8811. **Knives** for above, in case, from \$5.75 to \$13.00, according to size.
- \* 8811. **Microtome, Students**, with clamp, without case, with **Knife** of best hand forged steel, 12 cm. cutting edge, in plush lined case, \$20.00
- \* 8812. **Microtome, great improvement** over old form "section cutters" ..... \$12.00



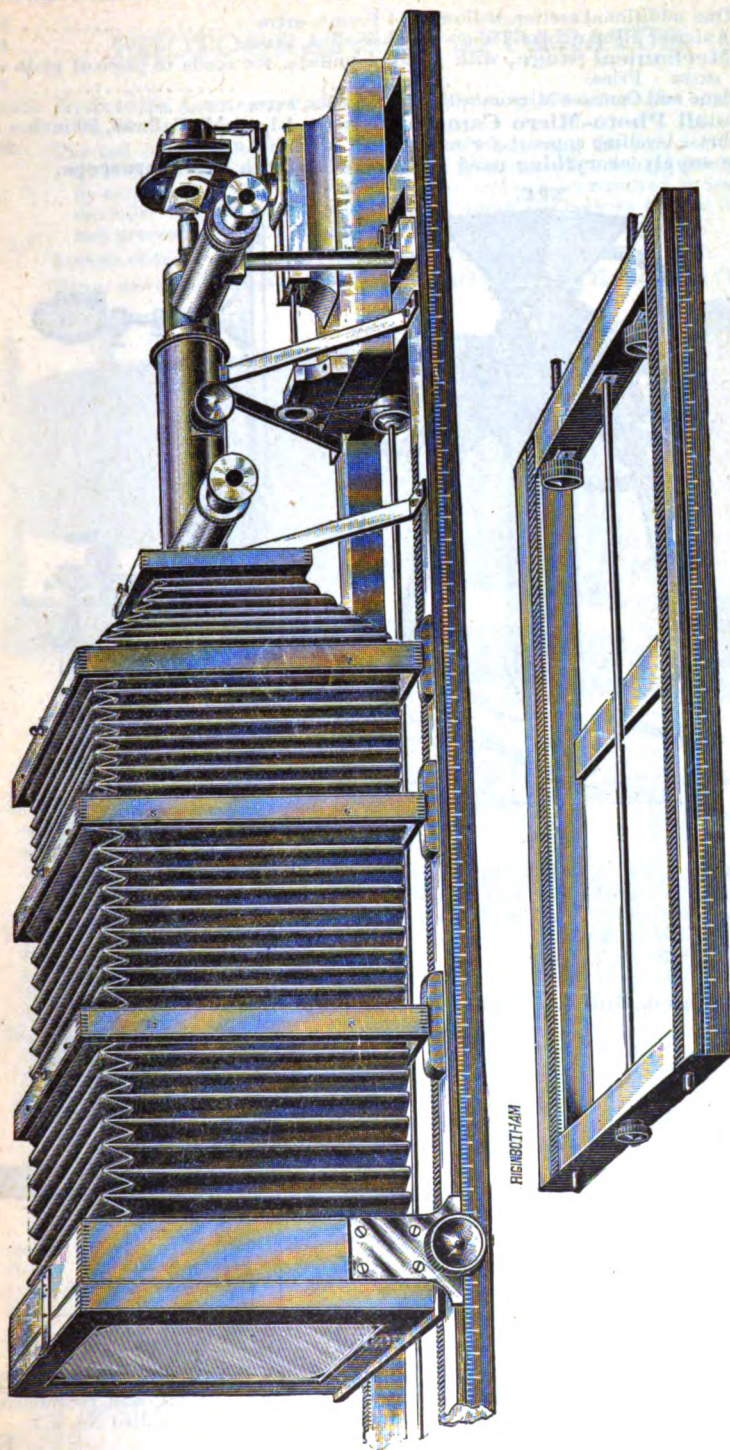
8812



8808





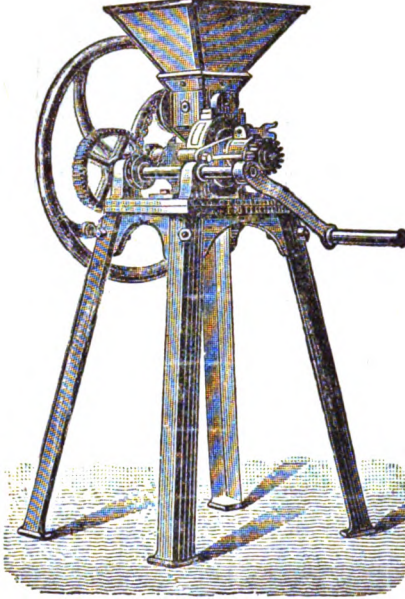


8813

○\* 8813. Professional Photo-Micro Camera, with tapering bellows and one section with ground glass, posterior rectangular tube, one frame section, complete adjustments, one  $3\frac{1}{2} \times 8\frac{1}{2}$  plate-holder, one achromatic amplifier..... \$125 00

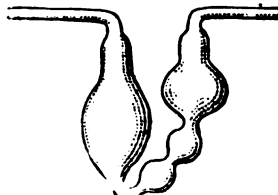
- 8813a. One additional section Bellows and Frame, extra ..... \$15 00  
 8813b. Anterior Rectangular Tube with Nose-piece, extra ..... \$12 00  
 8813c. Mechanical Stage, with grooved pulleys, for cords in place of plain stage.  
 extra. Price. .... \$10 00  
 8814. Plane and Concave Mirrors with Attachments, extra ..... \$4 00  
 ○\* 8815. Small Photo-Micro Camera, Zeiss'. Adjustable Bellows, 20 inches long,  
 brass levelling support for microscope; all finely mounted ..... \$36 00  
 We supply everything used in connection with the Microscope.

No C.

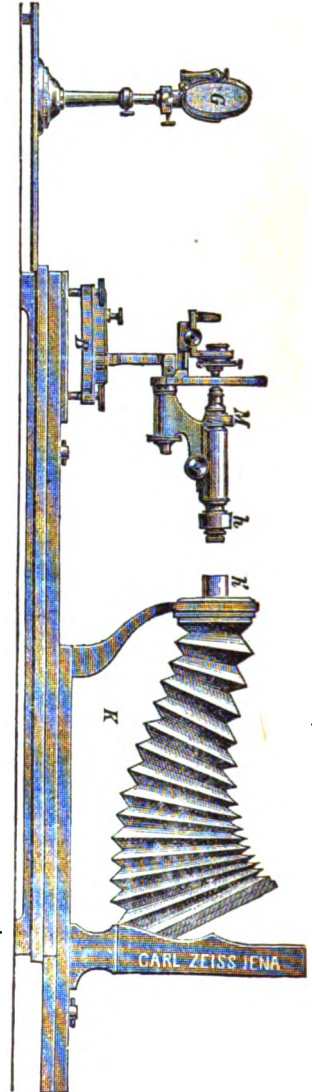


8816

- \* 8816. Mills, made especially for general laboratory  
 use. Adopted by all agricultural experiment  
 stations. Size "C," plates 160 mm diam. \$7 80  
 Extra plates, per pair ..... \$6 00  
 — 8817. Ditto, size "B" ..... \$61 20  
 Extra plates, per pair ..... \$5 00  
 \* 8819. Nitrogen Bulbs, Trollius, each ..... 60c



8819



8815

- 8819a. Paper for absorbing Milk, according to M. A. Adams, absolutely free  
 from fat, as manufactured by Messrs. Schleicher & Schüll, and recommended  
 by Prof. Soxhlet. In strips 6.5x56. cm., 50 in a package, called No. 571.  
 Price per package ..... \$1 75. Box of 100. .... \$3 25  
 The Adams Method is the only official in England and has been adopted also  
 in this country by all Agricultural Stations. Each strip provided with trade mark.  
 8820. Parchment Paper Tubing, for dialytic experiments, 50 mm. diameter.  
 Bundles, 110 feet, per bundle ..... \$3 00



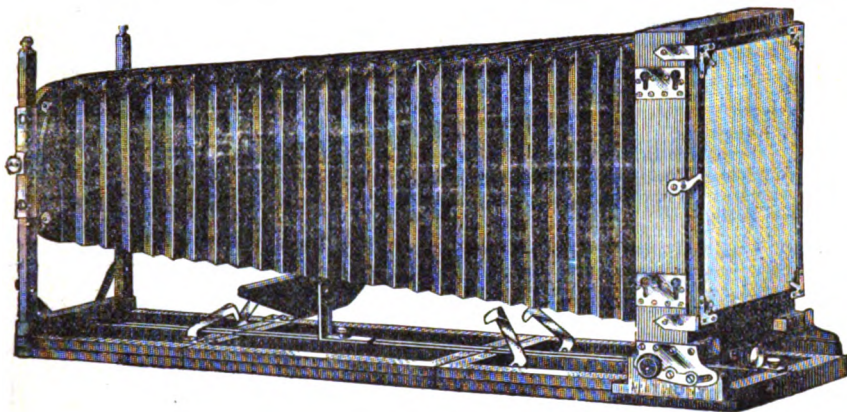
## PHOTOGRAPHIC APPARATUS.

- \* 8822. **Novelette Camera**, 8×10, with single swing, *extra length*, for copying, enlarging, etc.

The bed is composed of three sections. By removing the rear section a regular 8×10 Novelette Camera is obtained. The extra section is held firmly in position by two dowel pins and our hook clamps, and can be removed in less than three seconds. A movable support is placed under the bellows to hold it in position and prevent sagging. All is packed in an ordinary carrying case.

Length of focus ..... 32½ inches | Total weight ..... 7 pounds

Price, including one of our new style double Novelette Holders and Case... \$40 00



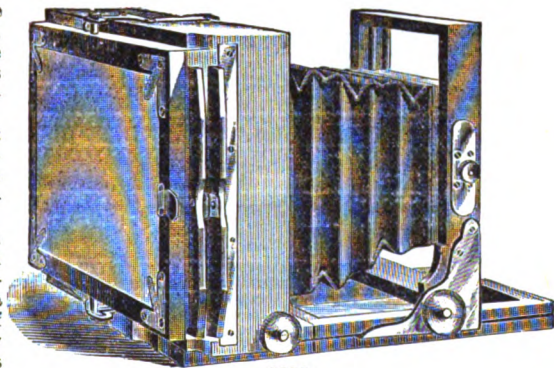
8822

### LANDSCAPE CAMERA.

- \* 8823. This Camera is made of highly polished mahogany, and the metal work has the draw file finish, the same as that used on the finest mathematical instruments.

It is provided with rising front and single swing and is adapted to front focus, having the double rack and pinion movement.

The ground glass is fitted with the patent spring actuated movement which keeps it always attached to the camera without being in the way of the operator. The camera may be used for making pictures either vertically or horizontally by means of a plate on the side. The price includes camera, one Eclipse double dry plate holder and canvas carrying case.



8823

Size of View,	4×5	4½×6½	5×7	5×8	6½×8½	8×10
Price,	\$10 50	11 00	12 00	13 50	16 00	22 50
Extra d'bl Zephyr Holders,	\$1 20	1 25	1 25	1 35	1 60	1 85 each.
Extra d'bl Eclipse Holders,	\$2 00	2 20	2 20	2 20	3 30	4 30 each.

- 8823a. **Landscape Camera, complete equipment**, includes beside the camera, a patent Eclipse double dry plate holder, fine single achromatic lens, Triplex Tripod and canvas carrying-case, which contains all the above-named articles except the tripod legs.

Size of View,	4×5	4½×6½	5×7	5×8	6½×8½	8×10
Price,	\$16 00	17 00	18 00	20 00	24 00	31 50
Extra Zephyr d'bl Plate Holders,	\$1 20	1 25	1 25	1 35	1 60	1 85 each.
Extra Eclipse d'bl Plate Holders,	\$2 00	2 20	2 20	2 20	3 30	4 30 each.

**Photographic Supplies of every description.**

- \* 8824. **Patent Antiplanetic Group Lens**, made by C. A. Steinheil Soehne, Munich. New in principle and construction, consisting of two non-symmetrical cemented pairs, placed closely together. It is rectilinear and is remarkable for its powerful and even illumination and sharpness. In rapidity it is only excelled by the regular and expensive portrait combinations.

**Recent Improvements** in the mounting of the lenses of this series make them still more compact than formerly and allow the front hood of lens to screw off uncovering a screw thread which can be very conveniently used for adjusting lens to detective cameras, shutters, prisms or other appliances.

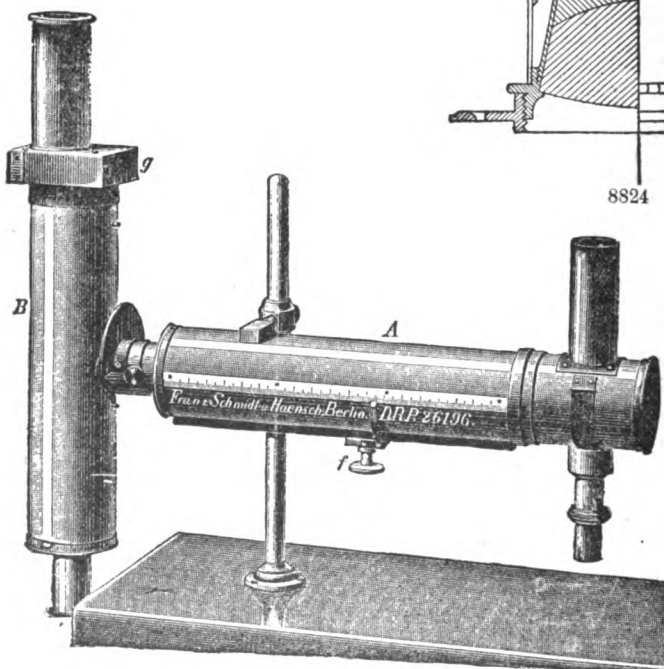
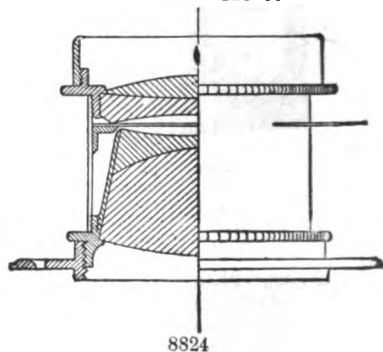
Designed for **Portraits, Group, Architecture, Landscape, Instantaneous Work and Enlargements**. Unexcelled for **Flashlight Portraits and Groups**.

No.	0	1	1b	2	2b
Aperture,	$\frac{1}{2}$	11-16	13-16	1	1 3-16 in.
Focal length,	$1\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	6 $\frac{1}{2}$ in.
Size of Portrait or Group,	$1\frac{1}{2} \times 1\frac{1}{2}$	$3\frac{1}{2} \times 3\frac{1}{2}$	$4\frac{1}{2} \times 3\frac{1}{2}$	$4\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$ in.
Size of View or Landscape,	$2 \times 2$	$4\frac{1}{2} \times 3\frac{1}{2}$	$4\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$	$5\frac{1}{2} \times 4\frac{1}{2}$ in.
Price,	\$16 00	18 00	22 00	24 00	28 00

No.	3	4	5	6	7
Aperture,	1 5-16	1 11-16	$1\frac{1}{2}$	$2\frac{1}{2}$	3 1-16 in.
Focal length,	$7\frac{1}{2}$	9 $\frac{1}{2}$	$10\frac{1}{2}$	$14\frac{1}{2}$	17 $\frac{1}{2}$ in.
Size of Portrait Group,	$5\frac{1}{2} \times 4\frac{1}{2}$	$7 \times 5$	$8\frac{1}{2} \times 6\frac{1}{2}$	$10 \times 8$	$12 \times 10$ in.
Size of View or Landscape,	$7 \times 5$	$8\frac{1}{2} \times 6\frac{1}{2}$	$10 \times 8$	$12 \times 10$	$15 \times 12$ in.
Price,	\$32 00	42 00	52 00	84 00	128 00

For Photographic Chemicals,  
see our Chemical List.



8825

- \* 8825. **Photometers, Weber's, folding**. Results more accurate than with any other instrument. Preferred to Bunsen's.  
Packed complete, in case,  $22 \times 10\frac{1}{2} \times 6$  in. . . . . \$168 00

Any and all Supplies for Physical Laboratories from stock, of our own make and importation, or imported to order at manufacturers' prices.



## PIPETTES.

\* 8826. Pipettes, Automatic, with three-way stop-cock.

Capacity,	10	25	50	100 CC.
Each,	\$2 25	2 50	2 75	3 00

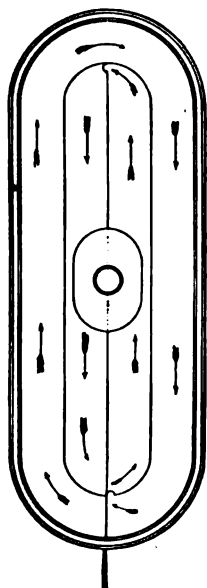
\* 8827. Pipette, Crampton's Sucrose and Glucose.....\$1 50

8828. Pipettes, Sugar, Dr. Wiechmann's, 10 CC., complete, fitted.....\$1 50

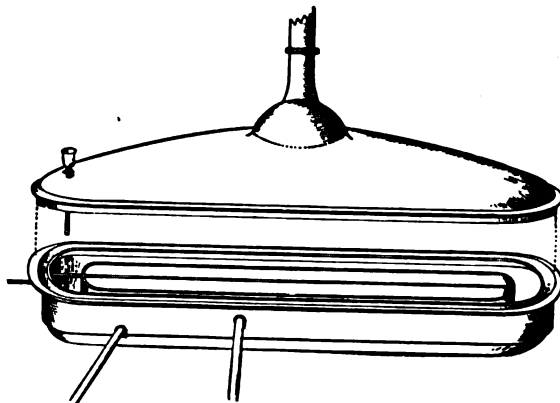
8829. Plates, Porous, Bisque, 10 inch diameter, for drying crystals, etc., each.....15c

8830. Plates after Hirsch, porcelain, perforated, edges bevelled, to fit funnels.

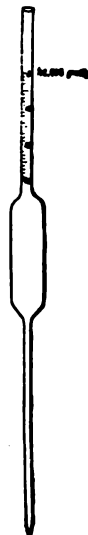
Diameter,	1	1 1/4	2 inches.
	.15	.20	.30 each.



8832



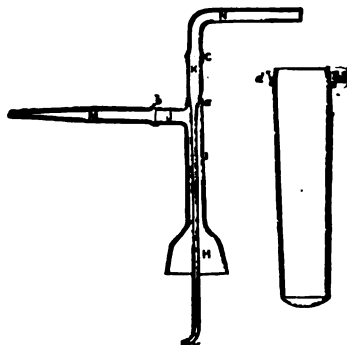
8832



8827



8831



8833



8826

## PLATINUM.

○\* 8831. Platinum Dishes, for iron analysis. These dishes have flat bottoms, straight sides, and are wired at the top, with the wire fused into the dish under the lip.

No. 1, diameter, 90 mm.; depth, 50 mm.; weight, about 80 grammes.

No. 2, " 100 " " 55 " " 100 "

No. 3, " 110 " " 58 " " 125 "

Per gramme ..... 82 cts.

\* 8832. Large Platinum Stills for Acid Works. Special prices and descriptions on application.

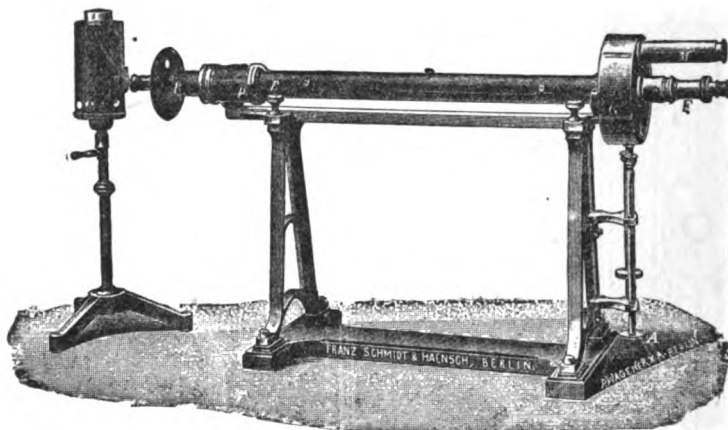
○\* 8833. Platinum Crucible, tubulated, according to Dr. Gooch, as used in iron analysis for the determination of combined water and carbon in carbonaceous matter, per gramme..... 85 cts.

Platinum in any form, pure, or alloyed with any percentage of Iridium.

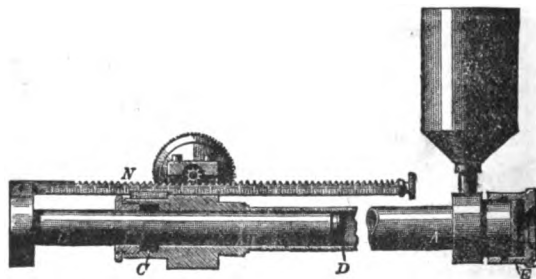
## POLARISCOPES.

**Schmidt & Haensch Half-Shade Instrument, with double quartz compensation, latest construction, with Lippich's Polarizer and new reading arrangement, with protecting cap for the wedge compensation, on Beck Stand and glass shade.**

- 8834. **Polariscope, 200 mm Tube**.....\$305 00
- 8835. **Ditto, 400 mm Tube**..... 325 00
- 8836. **Ditto, 600 mm Tube**..... 357 00
- Any of above instruments arranged with triple field of vision..... more, 42 00
- If on Tripod Stand..... less, 21 00
- If without protection cap for wedge compensation..... less, 15 25



8837



8840

## POLARISCOPE ACCESSORIES.

**Control Tubes for Polariscope, an absolute medium for testing correctness of polariscope scale at any part.**

- \* 8840. **Control Tube for Half-Shade Instruments, for 200 mm Tube Instrument**.....\$27 00
- 8841. **Ditto, for 400 mm tube instrument**.....\$28 50
- 8842. **Ditto, for 600 mm tube instrument**.....\$30 00
- 8843. **Conversion and Observation Tube, after Prof. Landoldt, with jacket for water circulation. 100 mm tube**.....\$7 50
- 8844. **Ditto, 201 mm tube**.....\$8 00
- 8845. **Ditto, 400 mm tube**.....\$9 50
- **Thermometer of Jena normal glass, for same**.....\$3 00

- \* 8846. Press, New, Hydraulic,  
Maximum power, 300 atmospheres,  
with cylinders  $4\frac{3}{4} \times 18$  and  $7\frac{3}{4} \times 20$   
inches, and Manometer.

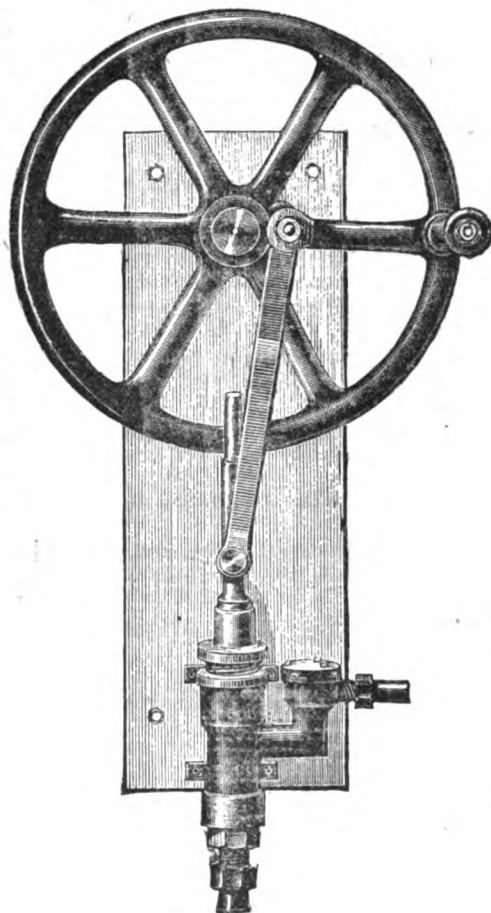
Complete.....\$250 00

**Prisms of Quartz, Rock Salt, Nichols,  
etc., of any description, furnished  
to order, at low figures.**

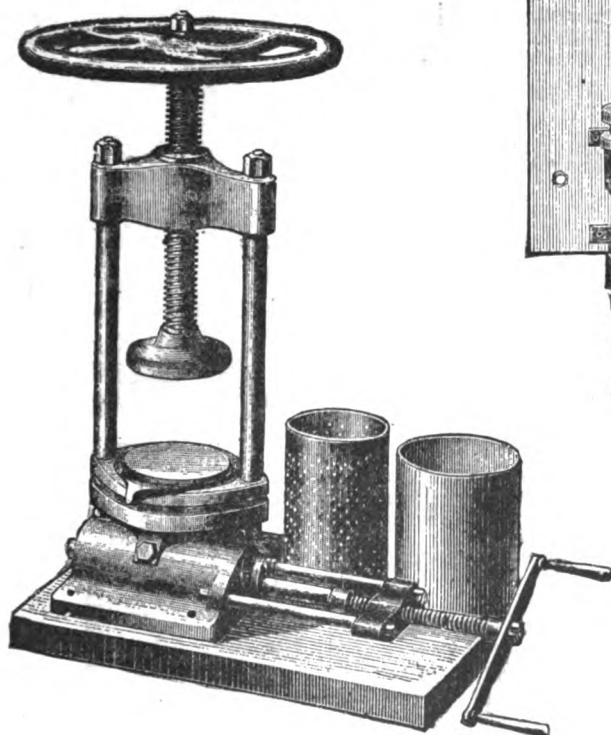
- \* 8847. Pump, arranged for use with  
**Vacuum Apparatus No. 8614 and for  
general purposes.** Cylinder,  $2\frac{1}{2}$  in.  
diameter, stroke,  $5\frac{1}{2}$  in.; 1300 litres  
water per hour, at 35 revolutions  
per minute.....\$100 00

- \* 8848. Retorts, of Iron, Cylin-  
drical, new form, for gradually  
generating oxygen,  $3\frac{1}{2} \times 22$  in..\$3 00

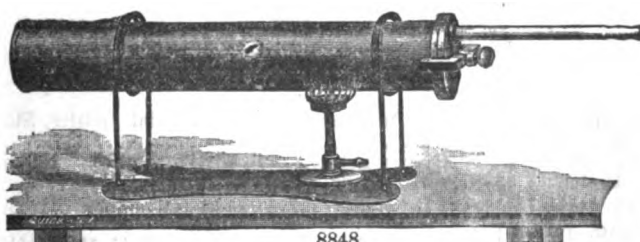
8849. Folding Support for above...\$1 00  
**Soapstone or Slate for Laboratory  
Tables, any size.**



8847



8846



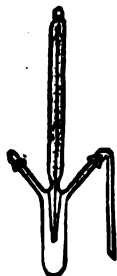
8848

## SPATULAS.

- 8850. **Spatulas, solid steel, nickel-plated, balanced handles.**  
 Size of blade, 3 4 5 6 7 8 9 10 12 inches.  
 Each, .25 .30 .40 .45 .50 .65 .75 \$1 00 1 75
8851. **Spatulas, of pure solid nickel, double end.** Length, 4½ 6 7 8½ inches.  
 .30 .50 .60 .80
- \* 8852. **Spatulas, porcelain, with spoon at one end.** Length, 6 8 inches.  
 .25 .40 each.
- \* 8853. **Specific Gravity Tubes, or Picnometers; Sprengel's with Thermometer and Suction Tube** .....\$4 75
- \* 8854. **Ditto, plain, U shape**.....\$1 00
8855. **Spoons, pure solid nickel, double spoon.**  
 Length, 4½ 6 7 8½ inches.  
 .45 .60 .65 .90 each.
8856. **Ditto, ditto, Spatula Handle.**  
 Length, 4½ 6 7 8½ inches.  
 .45 .60 .65 .90 each.
8857. **Sodium Spoons, of brass gauze, with hinged cover**..... 40c
- \* 8858. **Steam Boilers, steel, carefully made and tested, 12 gallons capacity**.....\$50 00  
 Designed for Laboratory use.



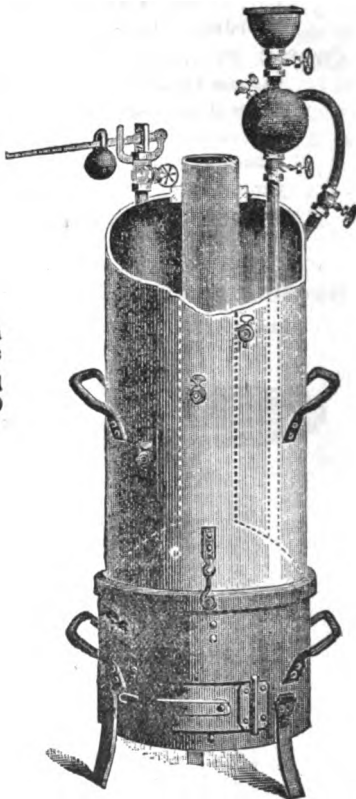
8852



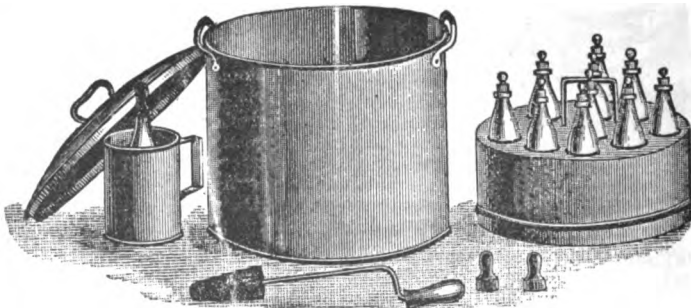
8853



8854



8858



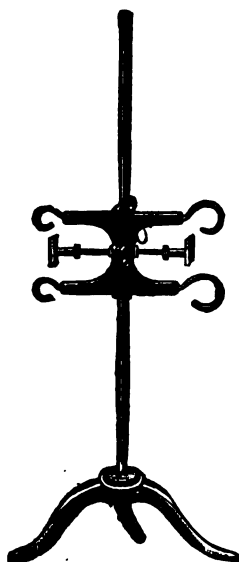
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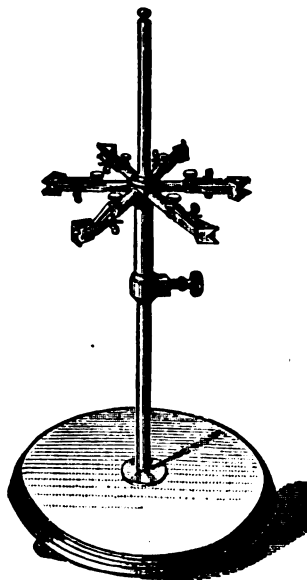
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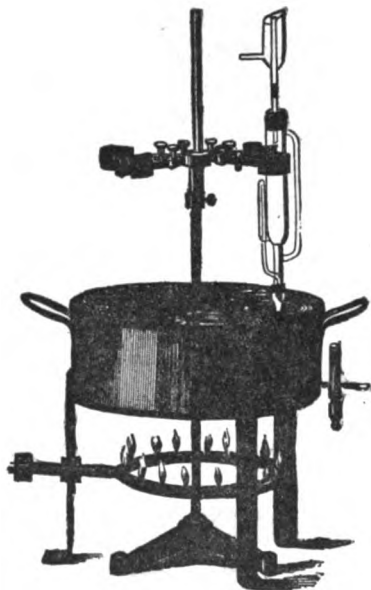
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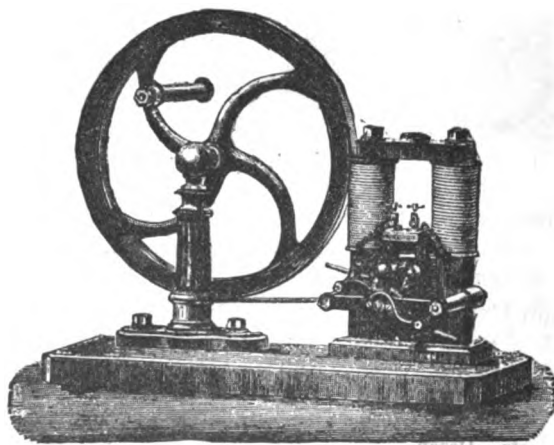
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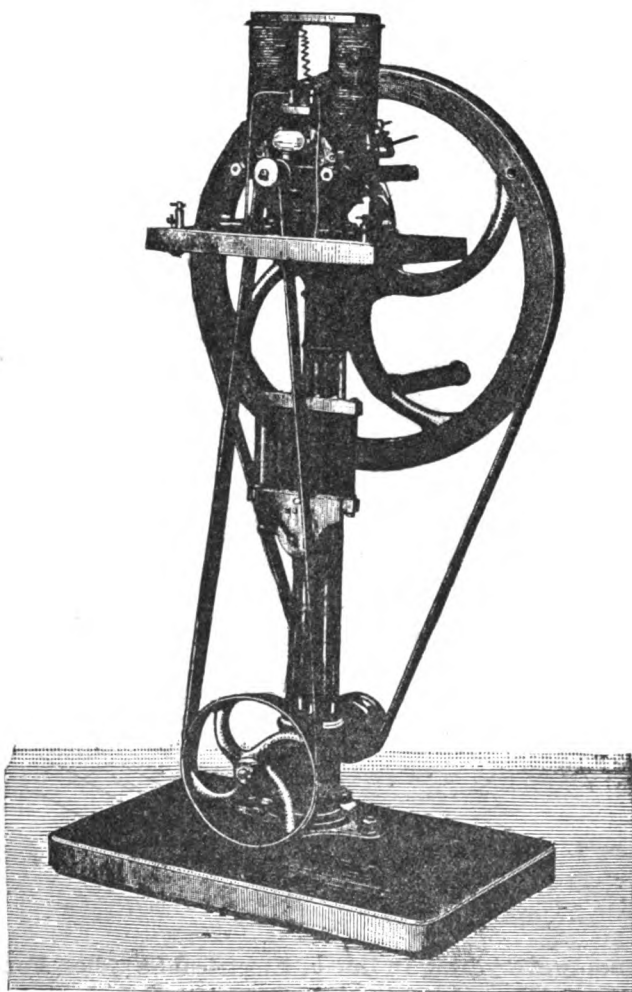


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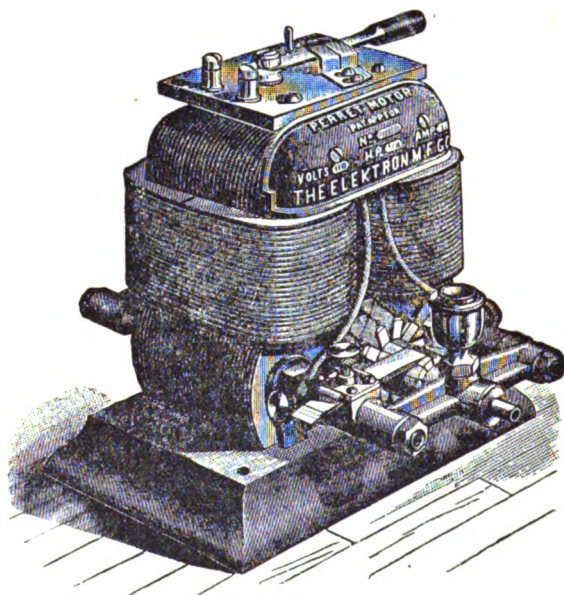
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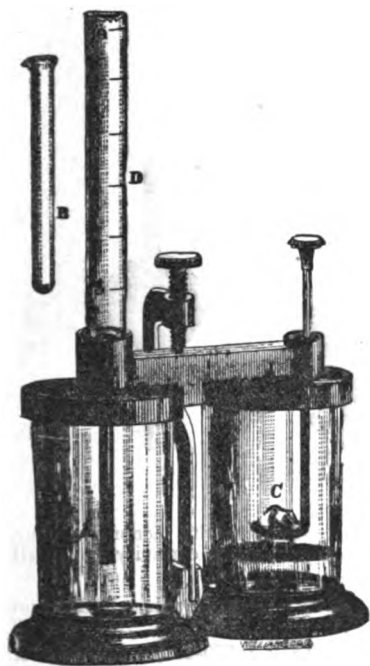


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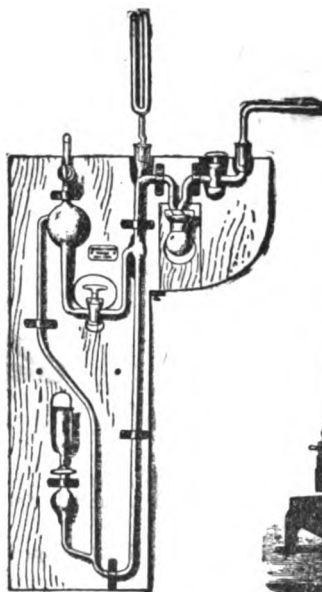
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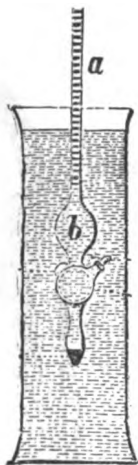
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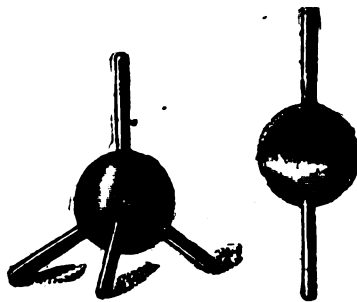
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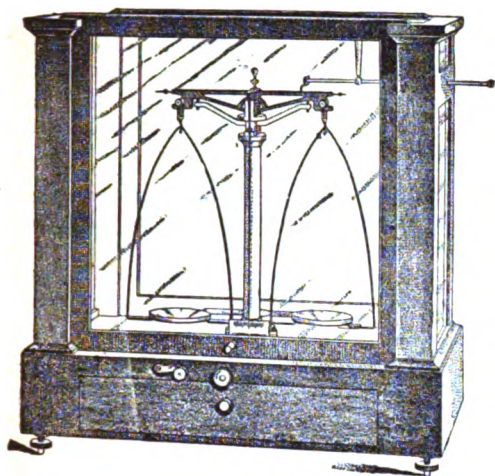
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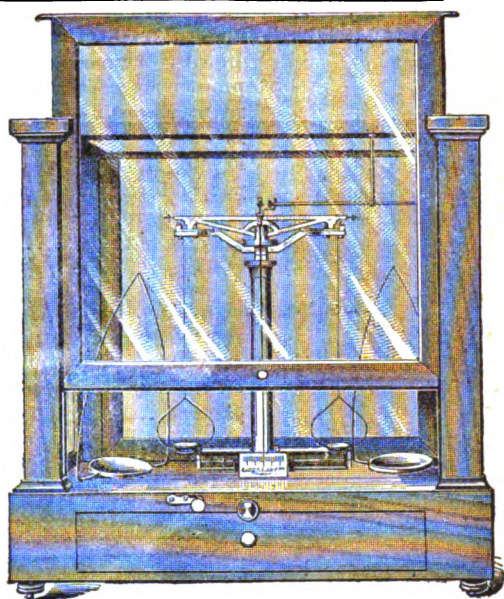
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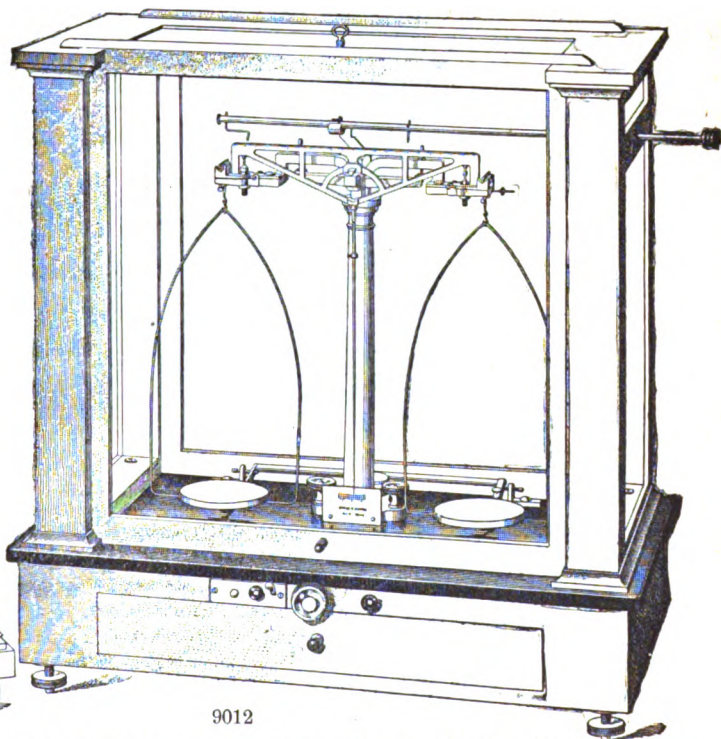


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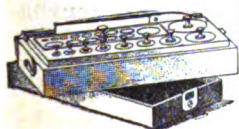


9011

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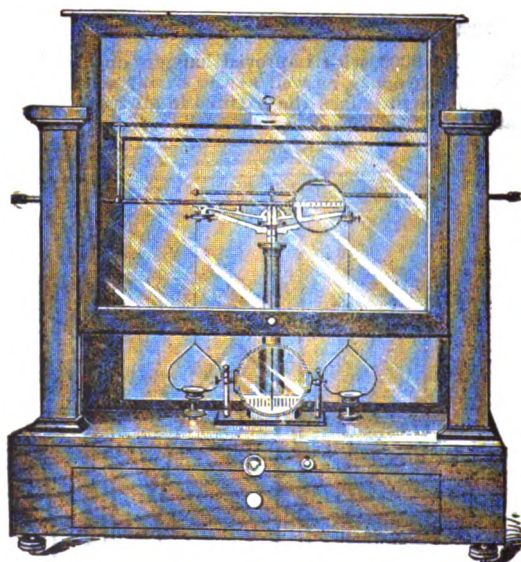
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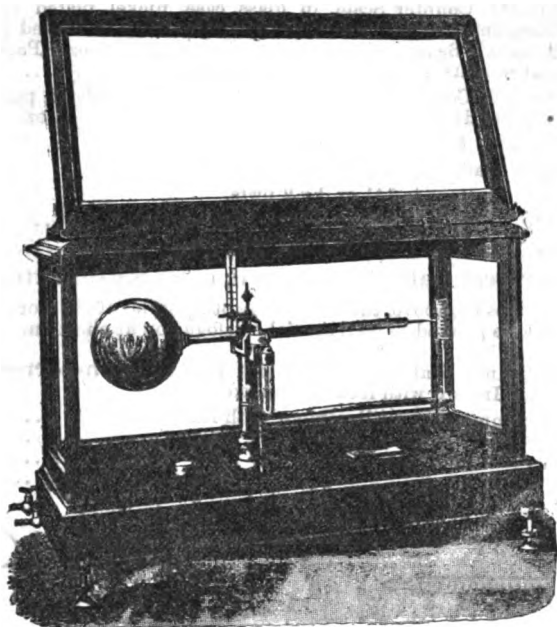
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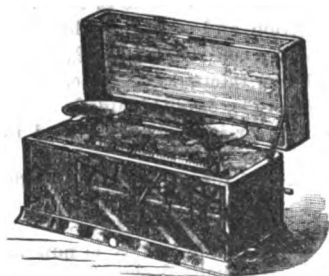
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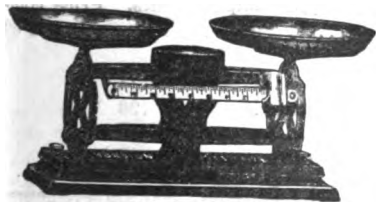


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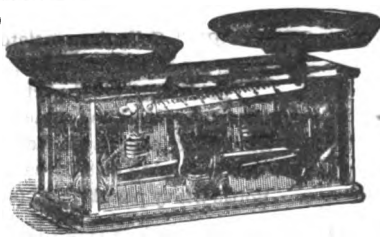
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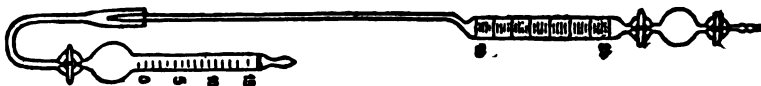
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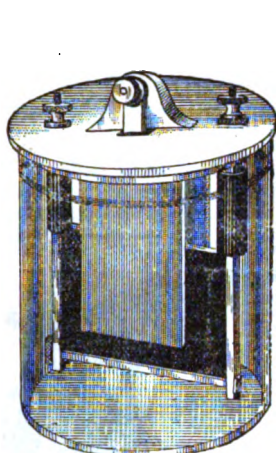
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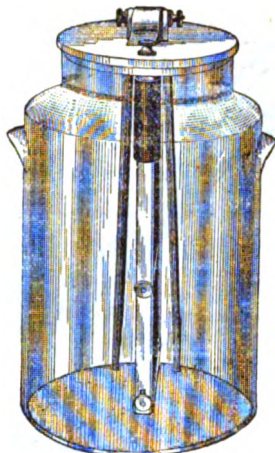
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9022



9023

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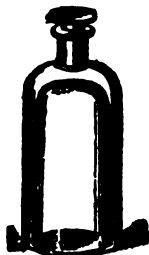
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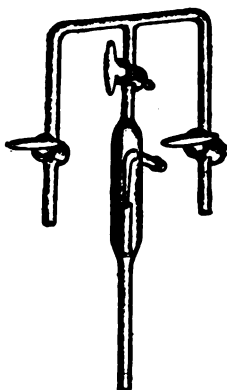
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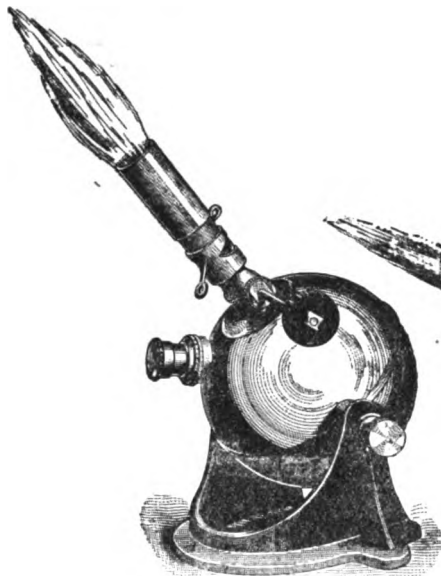
9024



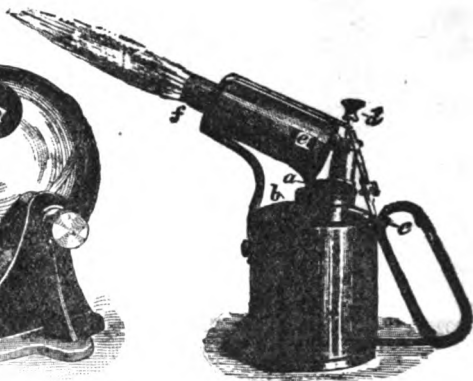
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- \* 9024. Bell Jar, with double walls (Sach's), for observing plants under different colored liquids. 12 x 5 in. ....\$5 75 16x6 in. ....\$7 00

- \* 9024a. Blast Apparatus for water pressure, made entirely of glass.....\$7 00

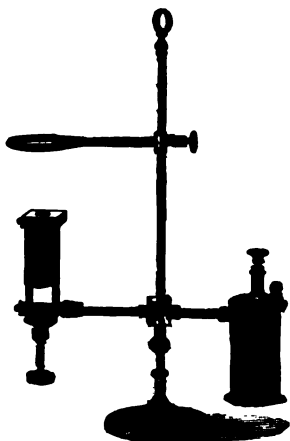


9025



9025a

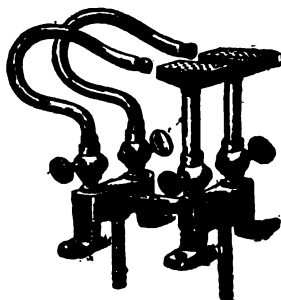
- \* 9025. **Blast Lamp, Barthel's, for gasoline; absolutely safe, of excellent construction, and very powerful; specially adapted for fusions and other purposes, where gas is not available, as once started it requires no further attention, and being mounted on swivel, can be set at any angle.....\$7 50**
- \* 9025a. Ditto, ditto, plain form, not inclinable, for Kerosene, side flame.....\$5 00
- 9025b. Ditto, ditto, " " " " " " upright flame. ....\$5 00



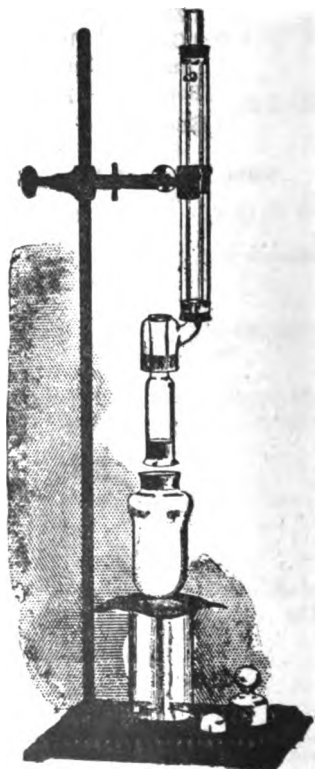
9026



9027b



9027



9027c

- \* 9036. Blast Lamp, Hoskins, for gasoline. For all purposes in the laboratory where Bunsen burners, alcohol lamps or blasts may be used, such as fusions in platinum crucibles, ignitions, etc. The heat may be quickly controlled from that of a powerful blast to that of a Bunsen flame. The apparatus is automatic, and is fully guaranteed.....\$15 00
- \* 9027. Ditto, ditto, glass blowers, for gas. One only of set of 2 shown in out.
- |                   | Single flame, | Double flame, | Triple flame, |
|-------------------|---------------|---------------|---------------|
| Per set of 2..... | \$4.50        | \$7.00        | \$10.00       |
- This is the most practical lamp for working large tubes, and is in general use in large glassblowing establishments.
- 9027a. Blast Lamp, Bunsen's, extra large and very powerful.....\$9 00
- \* 9027b. Blow-pipe, Plattner's, of brass, with gas supply tube, as used at Harvard University.....\$2 00. With stop-cock.....\$2 50
- \* 9027c. Boiling Point Determination Apparatus, Hite's; a thermometer reading to 1/1000 degree shows no variation in the temperature of a liquid in the tube.....\$ 9 00
- |                   |       |
|-------------------|-------|
| With support..... | 10 00 |
|-------------------|-------|

## BOTTLES.

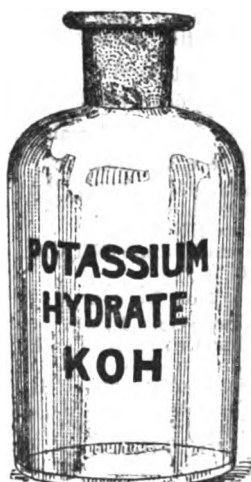
***Etmer & Amend's New Reagent Bottles,  
Extra Heavy Glass.***

WITH IMPROVED STOPPERS, AND CHEMICAL NAMES AND SYMBOLS DISTINCTLY AND DEEPLY CUT IN THE GLASS.

**These Bottles are made of best German glass to resist the action of reagents, and are provided with a very strong, polished stopper with projecting rim and square top. The advantages of this improved stopper are evident at glance: the rim protects the mouth of the bottle from dust, and the shape of the stopper makes it so strong, that considerable force may be used in removing it from the bottle, without fear of breakage; moreover, the shape permits of its being placed on the table, either inverted or sideways, without the ground part touching. There has long been needed a really good and, at the same time, cheap reagent bottle, especially adapted for students' use, and it is to meet this want that we place our New Reagent Bottles on the market, feeling sure that they will prove to be what we claim, the best and cheapest ever offered for the purpose.**



**9028-9030a**



9028 - 9030a



**Bottles for Potassium Hydrate**, and other chemicals, from which an ordinary stopper is removed with difficulty or not at all, are provided with a loosely fitting stopper, the under part of the flange of which, as well as the mouth of the bottle, are ground true to prevent evaporation.

- \* 9028. E. & A. New Reagent Bottles, 4½ oz. capacity, height 5½ in. Per doz net ..... \$3 25
- \* 9029. Ditto, ditto, 8 oz. capacity, height 6½ in. Per doz., net. .... 2 75
- \* 9030. Ditto, ditto, 16 oz. capacity, height 7½ in. Per doz., net. .... 4 00
- \* 9030a. Ditto, ditto, 32 oz. capacity. Per doz., net. .... 5 00
- \* 9030b. Ditto, ditto, saltmouth, 4 oz. capacity, height 4½ in. Per doz., net. .... 2 50

For the present, we only keep in stock these bottles with the names listed below, all of 4½ oz. capacity, and the first four also of 8 oz. capacity, from which a selection may be made to suit convenience. Other 8 oz. bottles of names as per list will be imported to order at regular prices, but for special names, for all sizes, there will be a charge of \$2.00 for the mould for each name, to be added to prices quoted above.



9028-9030a



9030b

- 9030c. Set of 40 New Reagent Bottles, as per list below, consisting of five 8 oz. tincture, twenty-eight 4½ oz. tinctures and six 4 oz. saltmouths and one 1 oz. dropping bottle, like 9031 ..... \$ 7 75
- 9030d. Ditto, packed in shipping order. .... 8 00
- 9030e. 1 set, ditto, filled with c. p. reagents. .... 16 00
- 9030f. Set ditto, filled, sealed and packed in shipping order. .... 18 00

## 8 oz. Bottles.

Acid Sulfuric (dil.)  $H_2SO_4$ .  
 Acid Hydrochloric  $HCl$ .  
 Acid Nitric  $HNO_3$ .  
 Ammonium Hydrate  $(NH_4)HO$ .  
 Blank, 1.

## 4 oz. Bottles.

Acid Sulfuric conc.  $H_2SO_4$ .  
 Ammonium Chloride  $(NH_4)Cl$ .  
 Ammonium Oxalate  $(NH_4)_2C_2O_4$ .  
 Ammonium Sulfoeyanide  $(NH_4)SCNS$ .  
 Ammonium Molybdate  $(NH_4)_2MoO_4$ .  
 Ammonium Carbonate  $(NH_4)_2CO_3$ .  
 Acid Acetic  $(HC_2H_3O_2)$ .  
 Alcohol  $(C_2H_5)OH$ .  
 Silver Nitrate  $AgNO_3$  (amber).  
 Barium Chloride  $BaCl_2$ .  
 Calcium Hydrate  $CaH_2O_2$ .  
 Cupric Sulfate  $CuSO_4$ .  
 Ferric Chloride  $Fe_2Cl_6$ .  
 Hydric Sulfide  $H_2S$  (amber).  
 Ammonium Sulfide  $(NH_4)_2S$  (amber).

Magnesium Sulfate  $MgSO_4$ .  
 Mercuric Chloride  $Hg_2Cl_2$ .  
 Mercurous Nitrate  $Hg_2(NO_3)_2$ .  
 Platin Chloride  $PtCl_4$ . (1 oz. drop'g bot.)  
 Lead Acetate  $Pb(C_2H_3O_2)_2$ .  
 Potass Acid Chromate  $K_2Cr_2O_7$ .  
 Potass Ferrocyanide  $K_4FeC_6$ .  
 Potass Iodide  $KI$ .  
 Sodium Carbonate  $Na_2CO_3$ .  
 Sodium Acetate  $NaC_2H_3O_2$ .  
 Sodium Phosphate  $NaH_2PO_4$ .  
 Uran Acetate  $(UO)_2C_2H_3O_2$ .  
 Ether  $(C_2H_5)_2O$ .  
 1 blank.

## 4 oz. Saltmouth Bottles.

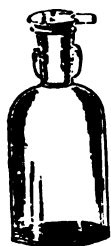
4 oz. Sodium Carbonate  $Na_2CO_3$ .  
 5 oz. Borax.  
 4 oz. Ferrous Sulfate  $FeSO_4$ .  
 4 oz. Potass Cyanide  $KCN$ .  
 3½ oz. Ammon. Sol. Phosphate.  
 Test Paper.  $Na(NH_4)HPO_4 + 4H_2O$ .



The following extra names, comprising a set for Toxicology, for which we have the moulds, will be imported to order at regular prices, of either 4 oz. or 8 oz. capacity:

Zinc Chloride.  
Sodium Sulfate.  
Sodium Chloride sol. 1%.  
Sodium Chloride sol. ½%.  
Standard Alkali solution.  
Sodium Hypobromide.  
Nylander's solution.  
Molybdic Acid.  
Glacial Acetic Acid.  
Nickel Nitrate.  
Glycerine.  
Standard Silver Nitrate.

Picric Acid.  
Millon's Reagent.  
Hydrochloric Acid 2/10%.  
Standard Acid solution.  
Standard Soap solution.  
Sodium Hypochlorite.  
Mercuric Nitrate.  
Sulfuric Acid 1.50.  
Guaiscum.  
Acid Sodium Tartrate.  
Bromine Water.



9032



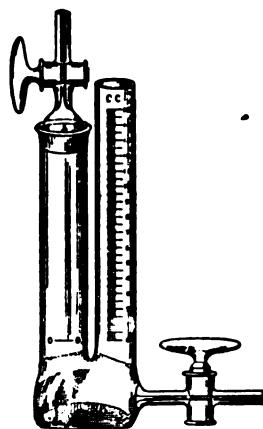
9033



9034



9036a



9037

\* 9032. Bottle, patent dropping, the best form. Very useful for dispensing expensive reagents.

Capacity.....	30	50	100	250 c. c.
Each.....	.25	.30	.35	.50

9032a. Bottle, with pipette ground in and rubber nipple, same shape as No. 6207.

	1	2 oz.
	.30	.35
		.40

\* 9033. Bottle, pressure, of heavy glass, well annealed, with patent stopper.

Capacity.....	30	60	100	150	200 c. c.
Each.....	.30	.40	.50	.60	.75

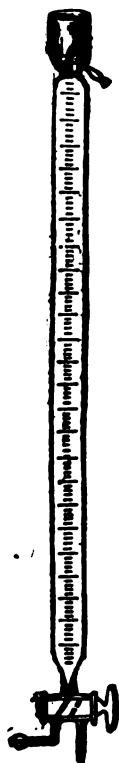
\* 9034. Ditto, ditto, latest form, very practical and easily adjusted. Each.....\$2 50

9035. Ditto, ditto, E. & A.'s, same shape as No. 9033, but still heavier, and with well ground glass stopper, to tie over. Capacity, 8 oz. Each.....75 cts.

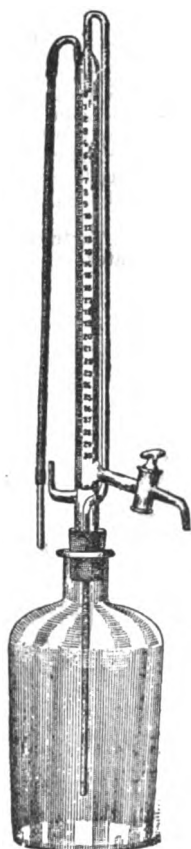
9036. Bottle, specific gravity, Squibb's latest form, like No. 8653, but with perforated glass stopper and wider top, allowing expansion and at the same time preventing loss by evaporation. Prices 20% higher than for No. 8653.

\* 9036a. Bottle, Canada Balsam, with cap and triangular stopper to prevent gumming.  
1 oz., .35. 2 oz., .50 each.

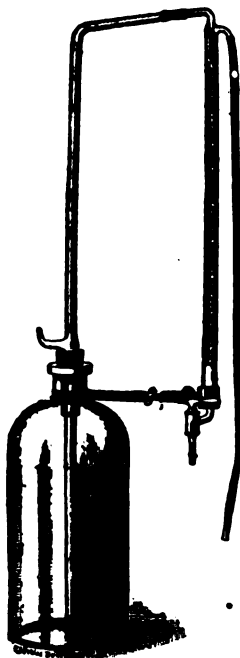
⊕ \* 9037. Bottle, specific gravity, for solids and liquids.....\$4 50



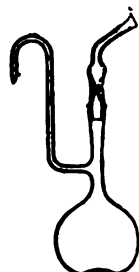
9039



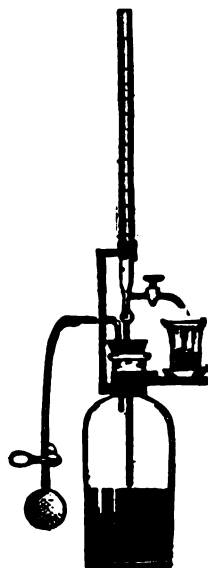
9040



9042



9038



9043

\* 9038. Bottle, Hogarth's, for determining specific gravity of iron ores..... 2 00

## BURETTES.

\* 9039. Burette, Automatic, E. & A.'s, with zero point and overflow reservoir; patent three-way stopcock and side tube to connect with reservoir.

25 c. c. 1-10,  
\$3.00

50 c. c. 1-10,  
\$3.50

100 c. c. 1-5,  
\$4.50

— \* 9040. Ditto, ditto, Squibb's, complete with reservoir. The most convenient form of self-filling automatic burette. Filled by pressure, the overflow syphons back into the reservoir, thus avoiding the trouble of reading the zero point.

25 c. c. 1-10,  
\$4.50

50 c. c. 1-10,  
\$5.00

— 9041. Ditto, ditto, ditto, with double rubber bulb for filling, in place of mouth-piece.

25 c. c. 1-10,  
\$5.50

50 c. c. 1-10,  
\$6.00

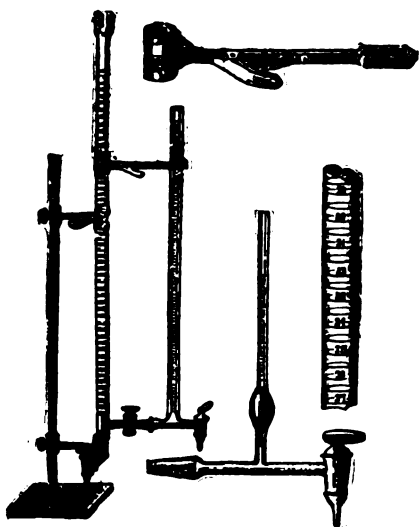
— \* 9042. Ditto, ditto, ditto, latest form, complete with reservoir and clamp.

25 c. c. 1-10,  
4.50

50 c. c. 1-10,  
\$5 00

Nos. 9040 and 9041 will be furnished with burette ground into neck of bottle for \$1.00 extra, and No. 9042 will be supplied with ground joints instead of rubber connections at neck and syphon tube, for use with corrosive liquids, for \$1.50 extra; or at syphon tube only, for 75 cts. extra.

\* 9043. Ditto, ditto, Knofler's, complete..... \$7 50  
All above burettes will be supplied with blue line on white background for 50 cts. each extra.



9044



9045

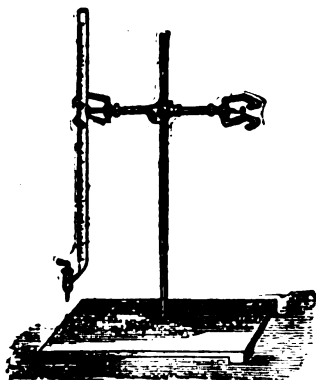


9047

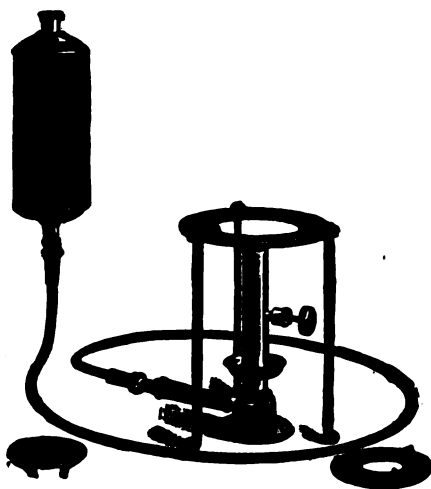


9046

- \* 9044. Burette for control, Meinicke's, with 2 stopcocks; 60 c. c. capacity, with c. c. marks around tube, and ground in control pipette with stopcock, divided in 1/100 c. c. Glass parts.....\$10 00
- \* 9045. Burette for weighing, Ripper's, with arrangement for suspending by aluminum wire. Each.....\$ 4 00  
Set of two complete, with support.....14 00
- \* 9046. Ditto, for oil, Koningh's.....5 00  
See for other burettes, Nos. 9210-13.
- \* 9047. Burette Float, Beutell's.....40



9048

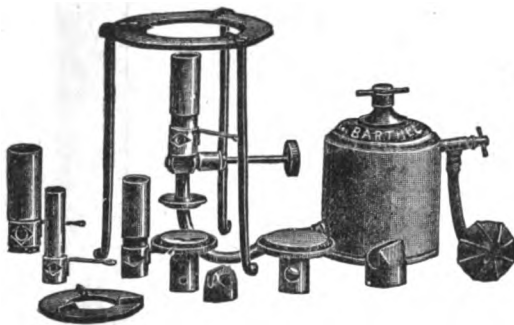


9049

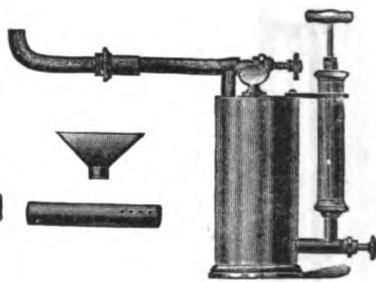
- \* 9048. Burette Stand, Allihn's, with porcelain base, brass rod and double automatic spring clamp, which instantly releases or firmly clamps the burette. A very desirable support.....\$ 4 00

## BURNERS.

- \* 9049. **Burner for Alcohol, Barthel's;** requires no wick, and cannot explode; very powerful; complete with  $1\frac{1}{2}$  meters flexible metallic tubing and reservoir of 1 litre capacity. Small size .....\$3 50  
 Large size ..... 10 50  
 Tripod, extra, " and " .75 respectively.  
 The small size equals in power two, and the larger, four ordinary Bunsen burners.

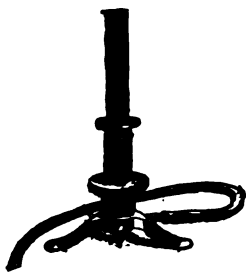


9050



9051

- \* 9050. **Ditto, for Gasoline, Barthel's.** We recommend this as the most perfect gasoline burner for chemical purposes, being, as it is, substantially constructed entirely of brass, it is perfectly safe, and cannot leak, gives a flame which can be readily adjusted from a very small one to a powerful blast of a maximum temperature of  $2000^{\circ}$  Celsius. Price.....\$ 7 50  
 Tripod, .50 extra.  
 To give a variety of flames in size and shape, we supply extra burners, for larger flame, \$1.00 each; for smaller flame, .50 each. See cut.  
 Circular burners, small, .75; large, \$1.00 each. See cut.



9052



9055



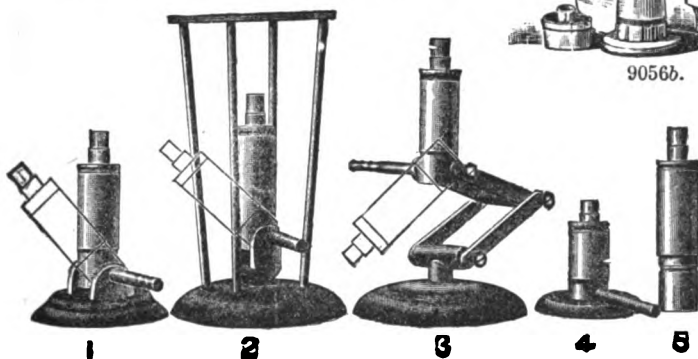
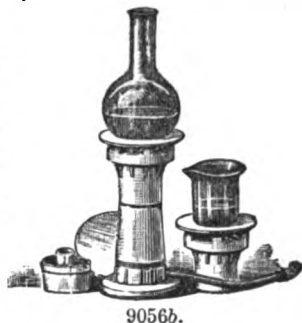
9056



9053

- \* 9051. **Burner for gasoline, Hoskin's;** an excellent lamp for laboratory work, giving an upright or horizontal flame, which is under perfect control for high or low temperatures. Complete with wing top, straight and bent burner attachments .....\$10 00

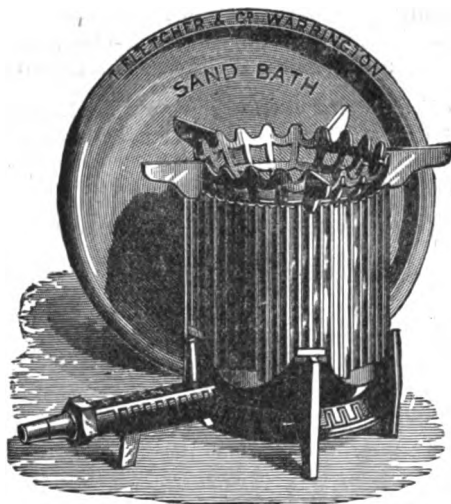
- \* 9052. Burner, Bunsen, adjustable, E. & A.'s; gas supply regulated by turning milled head screw; base nickel plated; the cheapest first-class burner on the market, and equally well adapted for either gas or gasoline gas 50
- \* 9053. Ditto, ditto, Fletcher's No. 5 G, for either gas or gasoline gas. In this burner, the size of the orifice through which the gas escapes is adjusted by turning the milled cap-nut seen inside the arm which supports the upright tube. The air supply is adjusted by screwing the arm up or down....\$1 00
9054. Ditto, ditto, ditto, Tyrell's, for gasoline gas; a modification of No. 8661... 1 25
- \* 9055. Burner, Bunsen, with constant flame, E. & A.'s; the best pattern.... 1 50
- \* 9056. Ditto, ditto, safety, designed by Prof. L. W. McCay. An automatic stop-cock shuts, off the gas supply immediately the flame jumps below; as efficient as the much more expensive forms.....\$1 50
- 9056a. Ditto, ditto, improved form, for gasoline gas .....\$3 25
- \* 9056b. Ditto, ditto, Chaddock's, of porcelain, for use in hoods, where metal soon corrodes.....\$1 75



9057

- \* 9057. Ditto, Dr. Friedburg's Safety Burner; constructed on a new principle, this burner draws its air supply from the top, and the gas inlet, being within the burner, is protected against side draughts, permitting the flame to be turned very low, without danger of lighting back; air supply regulated by sliding telescopic tube; suitable for either gas or gasoline gas.

Burner, No. 1 Plain	\$0.75.	Nickel-plated.....	\$1 15
" " 2 "	1.20.	" .....	1 60
" " 3 "	1.30.	" .....	1 70
" " 4 "	0.75.	" .....	1 00
" " 5 "	0.70.	" .....	1 00



9058



9059

- \* 9058. Burner, Fletcher's New Laboratory Burner, with support for vessels and sand-bath. The stand for vessels will carry round glass flasks, porcelain dishes, or flat bottomed vessels of any size, with perfect steadiness. The vessels can, by lifting the cylinder, be placed at different heights above the flame, which will burn steadily when turned down to its lowest point.

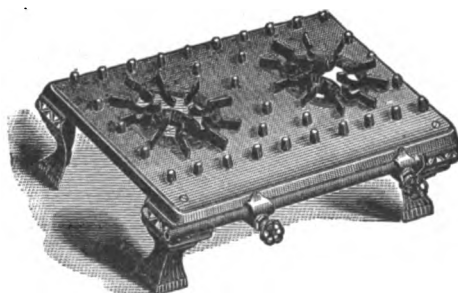
Nos.	210	215	220	230
Support for flask, diam.	4½ in.	5½ in.	7 in.	8 in.
" " flat vessels, "	6½ in.	7½ in.	9 in.	11 in.
Diam. of sandbath	9 in.	10 in.	13 in.	15 in.
Price, each	\$3.00	3.75	5.00	8.50
Extra for sandbath, each	.50	.80	1.15	1.50

- \* 9059. Ditto, Fletcher's Safety; can be turned down to merest flicker without lighting back; gauze easily replaced. Made in three sizes, all of brass.

	Small,	Medium,	Large,
Diam. of gauze across top	½ in.	1½ in.	1½ in.
Price, without stand	\$ .65	.85	1.10
" with "	1.25	1.50	2.00

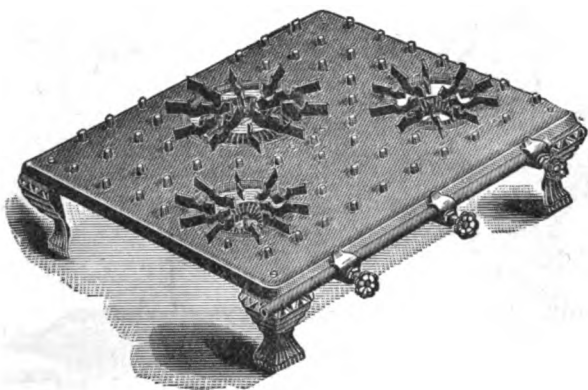
- 9060. Burner, Linnemann's, for zircon or magnesia light; medium size, mounted on adjustable iron stand, with flexible inlet tubes. \$20 00

Platinum disc to receive the incandescent body, 10 m.m. diam.	2 50
Zircon discs, 10 m.m. diam., each	1 50
Magnesia " 10 " " "	20



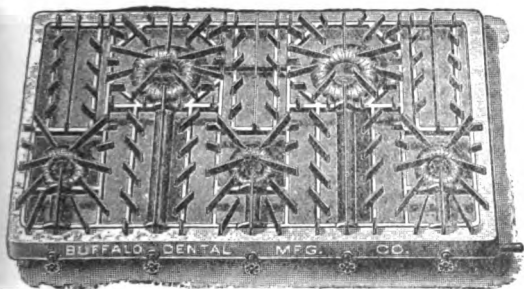
9061

- \* 9061. Burner, Hot Plate, with 2 radial burners and stop-cocks. Size of top plate, 11½x18½ inches; distance between centers of burners, 10 inches. \$ 5 00  
For gasoline gas. 5 50

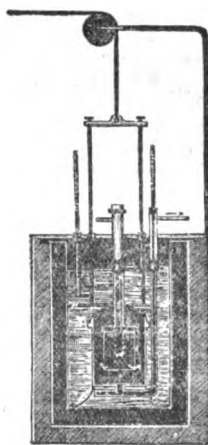


9062

- \* 9062. Burner, Hot Plate, with 3 radial burners and stop-cocks. Size of top plate, 19½x22½ inches; distance between centers of burners, 10 inches.....\$ 7 50  
 For gasoline gas..... 8 75

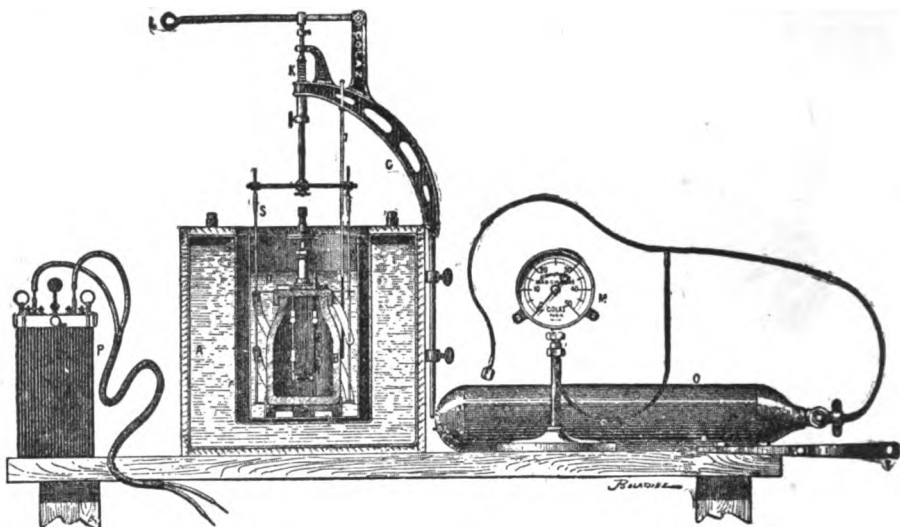


9063



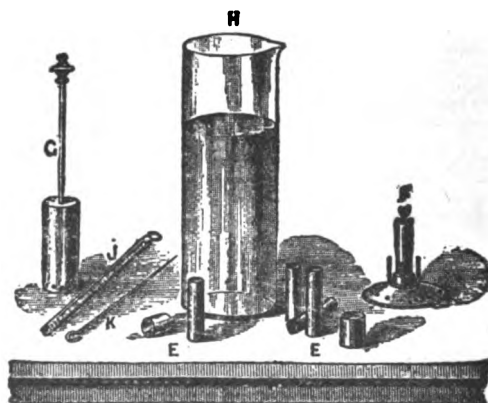
9064

- \* 9063. Ditto, ditto, with 5 radial burners and stop-cocks. Dimensions, 35 inches wide by 21 inches deep. Burners 11 inches apart between centers.....\$18 00  
 For gasoline gas..... 19 25  
 \* 9064. Calorimeter, Fischer's, latest form, for estimating the heat value of various fuels; body of silver, inside parts of platinum and pure nickel, basket of platinum gauze .....\$135 00  
 - 9064a. The same apparatus, with body of nickel plated brass instead of silver.. 90 00  
 - 9064b. If with inside parts of pure nickel, excepting only the platinum gauze basket, \$75 00



9065

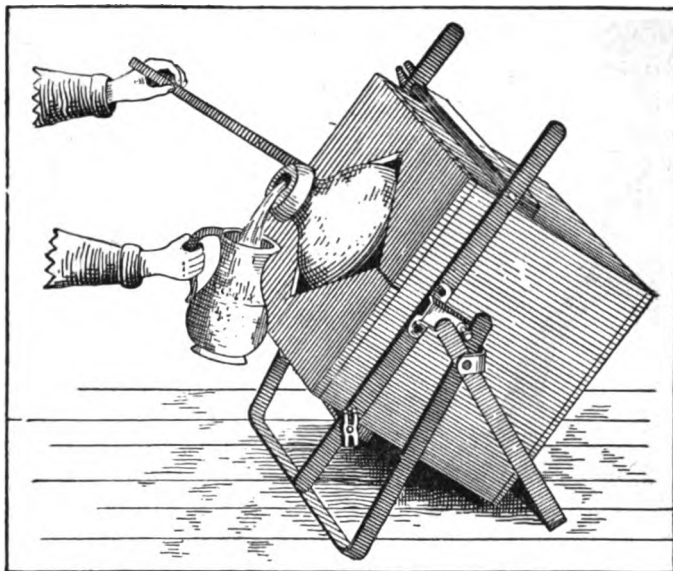
- \* 9065. **Calorimeter, Mahler's Bomb Calorimeter**; the best and most accurate apparatus for determining the heating power of fuels, and of especial value to gas companies and other large consumers of coal; complete with bomb of enameled steel, platinum tray, battery and stirring apparatus.....\$300 00
- Extras.**—Two standard normal thermometers in  $1/50^{\circ}$  Celsius..... 40 00
- Battery (Pile de M. Trouvé), fig. P.....\$32 00
- Cylinder of oxygen, price according to size.
- Pump, for compressing oxygen to 25 atmospheres..... 200 00
- This pump may be dispensed with where oxygen of the required pressure can be obtained in cylinders
- The above apparatus as sold by us, is made under the inventor's supervision, and fully guaranteed, making it a standard all over the world.
- 9065a. **Calorimeter, Hempel's modification**, as described in his work, "Methods of Gas Analysis." Complete with accessories (press excepted), and apparatus for preparing oxygen at required pressure.....\$120 00



9066

- \* 9066. **Ditto, Thompson's**, for determining the heating power of fuels, consisting of combustion cylinder, with separate spring clutch, base, 6 cylindrical copper furnaces, 2 short ditto, graduated glass water cylinder, fine thermometer in  $1/10^{\circ}$  C., hand scales with grammes or grain weights, iron pestle and mortar, package of oxygen mixture, etc. Complete in 2 cases with instructions for use.....\$40 00
- 9066a. Without accessories, in 1 case.....\$30 00

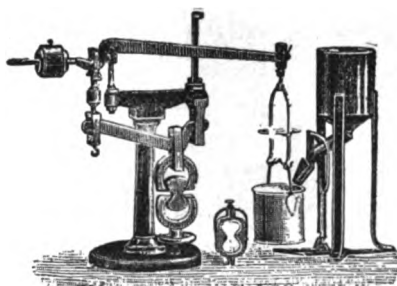




9067

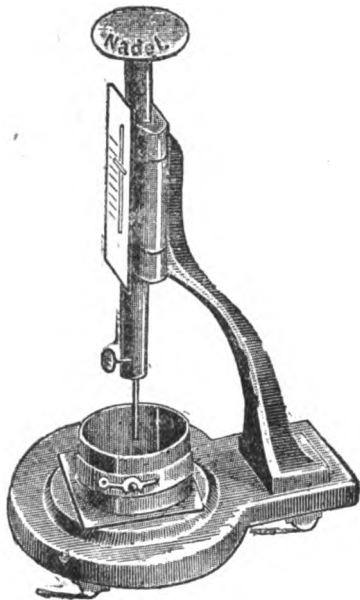
- ⊗\* 9067. Carboy Stand. An iron support for carrying and tilting carboys, by means of which carrying becomes easy, and contents can be poured out with speed and safety.....\$ 3 00

## CEMENT TESTING APPARATUS.

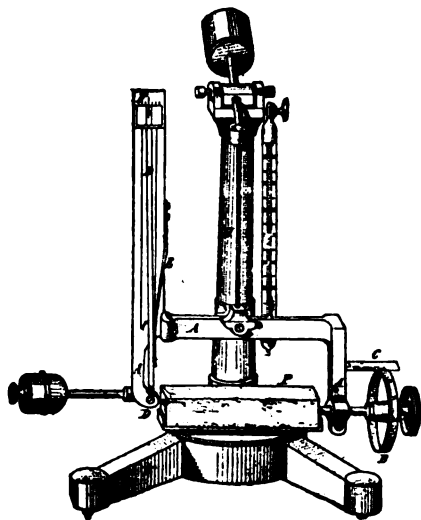


9068

- \* 9068. Double Lever Machine, for Testing Tensile Strength of Cement Briquettes 1 inch square; consists of breaking apparatus, leverage 1.50, moulds for making samples 1 inch square, and sandbox with automatic valve .....\$125 00
- \* 9069. Normal Needle Apparatus, Vicat's, for testing the time of setting, and the proper consistency of cement; with 2 boxes and 1 small thermometer graduated to  $1/5^{\circ}$ .....\$24 00
- 9070. Apparatus for use with No. 9069, for determining adhesive property of cements; with 10 pairs glass plates and 5 frames.....\$42 00
- \* 9071. Bauschinger's Apparatus, for determining change of volume of cements in setting .....\$108 00
- 9071a. Hammer Apparatus for the preparation of test pieces of cement for either the tensile strength or pressure tests..... \$125 00



9069



9071

9071b. Candelot's Apparatus for testing specific gravity of cements.....\$2 50

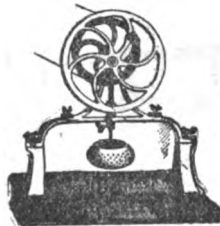
See also No. 5087.

Other Cement Testing Apparatus made or imported to order.

## CENTRIFUGAL MACHINES.



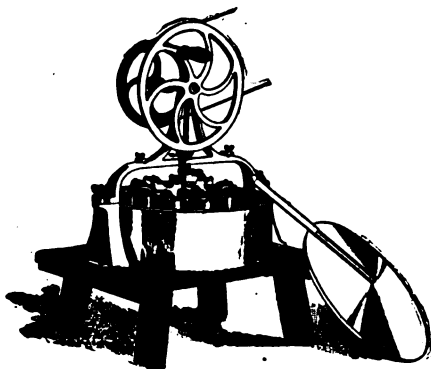
9072 (Fig. 2)



9072 (Fig. 3)



9072 (Figs. 4, 5)



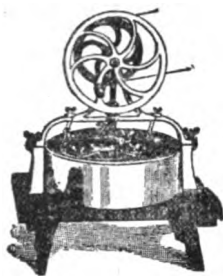
9072 (Fig. 1)

\* 9072. **E. & A.'s New Laboratory Universal Centrifugal Machine, for hand and power.** Height, as usually used, 24 inches; height, if raised on legs for heating, 32 inches; width, 24 inches.

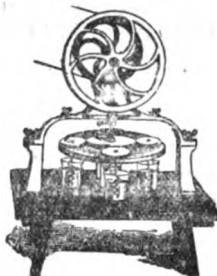
Price of machine, with 16-inch copper nickel-plated pan and folding legs, but without attachments \$30 00

**Universal Frame** for 10 bottles, as described below.....\$2 50

**Universal Frame** for sieve, etc., as described below.....\$3 00



9072 (Fig. 6)



9072 (Fig. 7)



9072 (Fig. 8)

*Extras:*

**Fig. 1. For fat separations. Set of 10 holders for Babcock milk bottles, etc.** (For blood serum it can be heated by extra Bunsen burner from below).....\$ 2 00

**Fig. 2. Set of 10 holders for test tubes, Esbach's albumenometers, etc.**.....\$ 1 75

**Set of 10 holders for fæculometers, Goetz phosphorus tubes, etc.**.....\$ 1 50

**Fig. 3. Small perforated porcelain vessel for drying chemical salts,** 5 00

**Fig. 4. Large perforated porcelain vessel for drying chemical salts,** 6 00

**Fig. 5. Centrifugal sieve, with 5 sets brass wire gauzes; mesh 20 to 100.**..... 10 00

**Fig. 6. Fitted with eccentric and two stirrups for shaking**..... 1 50

**Fig. 7. Stirring attachment for 5 beakers; complete with 5 centrifugal glass stirrers**.....\$ 6 00



9073



**Fig. 8. Fitted with grinding attachment, imitating the motion of the hand when grinding; plug cut to suit any size agate mortar**.....\$ 8 00

This machine is compact, manifold, and so constructed that all parts are easily accessible. The whole upper part can be removed without trouble.

- \* 9073. **The Purdy Electric Centrifuge, for urinary analysis, bacteriological work and blood investigations.** Maximum speed, 15,000 revolutions per minute. This indispensable apparatus, to those requiring high rates of speed, is of the best possible construction, and may be operated by electric currents of 110 volts direct, or 62 volts alternating. Attachment plugs and resistors are furnished for operating by any of the existing systems of electric-incandescent lighting. It can also be operated by the ordinary, galvanic and storage currents.

This Centrifuge is capable of a maximum speed of 15,000 revolutions per minute; with sediment tubes, by means of multiple resistors on the 110-volt current, 2,500 to 3,500 revolutions; with tubes carrying one ounce of urine, 1,500 to 2,500 revolutions per minute. It was devised by Dr. C. W. Purdy for centrifugal analysis of urine and the rapid and complete separation of sediments from fluids for microscopic purposes by means of centrifugal force. Centrifugal methods greatly hasten urinary analysis, thus by the aid of Dr. Purdy's Centrifuge and methods, a complete urinary analysis, qualitative and quantitative, including microscopic examination, is now possible within 20 minutes. By means of specially devised percentage tubes for this Centrifuge, Dr. Purdy makes immediate quantitative analysis of the urinary chlorides, phosphates and sulphates, as well as albumin, pus, blood, etc., and he proposes to extend this system of analysis to include most, if not all, urinary constituents, normal and abnormal.

The standard percentage tubes for this Centrifuge are carefully and accurately graduated in tenths of a cubic centimeter, up to 10 cubic centimeters, leaving 5 cubic centimeters for chemical reagents in analysis. Each unit of measurement (tenth of a cubic centimeter) represents just 1% in the reading.

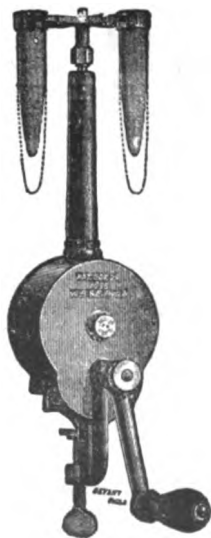
Price of the apparatus with single arm, including 2 percentage tubes, 2 sediment tubes, 2 aluminum shields, attachment plug and rheostat, for urinary analysis.

\$32 00, strictly net.

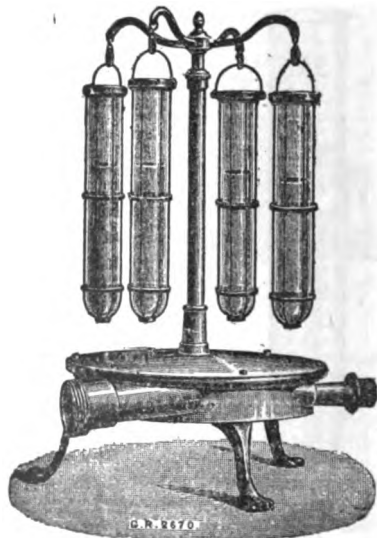
Extra percentage tubes and aluminum shields, each.....\$ 75  
Sediment tubes, each.....20

A double arm, for carrying 4 tubes will be furnished in place of the single arm, for \$2.50, if requested in the original order.

Special hollow arm, with screw caps and spiral springs, including 2 bacteriological tubes, for speed up to 15,000 revolutions per minute, extra.....\$6 50



9074



9075

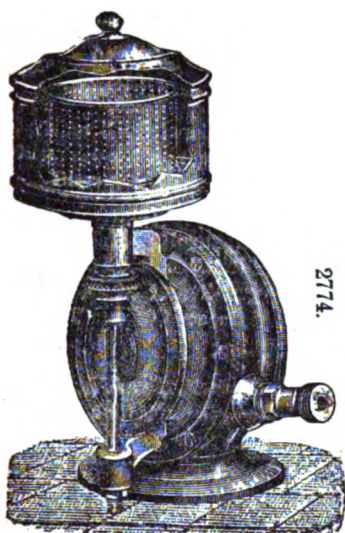
**Hæmatocrit tube**, graduated in  $\frac{1}{2}$  m.m., with capillary pipette, for use with above special arm.....\$1 50

In ordering, state the form of electric current by which it is proposed to operate the Centrifuge.

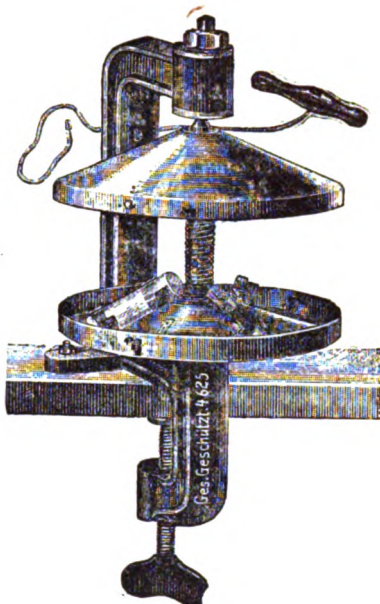
Special circular mailed on application.

- \* 9074. Centrifuge, high speed, complete for the sedimentation of urine.....\$13 00

- \* 9075. Ditto, with water motor, Heynemann's, with four holders for test tubes; a very convenient and cheap apparatus for use where water pressure is available.....\$18 00

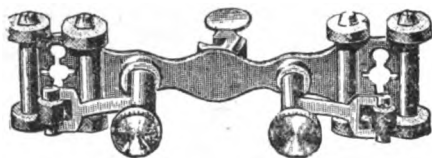


9076

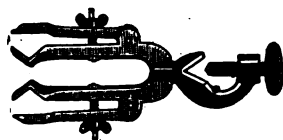


9078

- 9076. Ditto, with turbine combined, for steam or water pressure, with perforated revolving vessel of tinned copper; a substantial machine for manufacturing laboratories, etc.
- |                                       |         |         |          |
|---------------------------------------|---------|---------|----------|
| Diam. of perforated vessel.....       | 200     | 300     | 375 m.m. |
| Height " " .....                      | 120     | 170     | 200 m.m. |
| Number of revolutions per minute..... | 4,000   | 3,000   | 2,500    |
| Price.....                            | \$60.00 | \$70.00 | \$100.00 |
- \* 9078. Ditto, Gaertner's; simple, durable and not likely to get out of order, this Centrifuge is easier to operate than any other hand machine; complete with 12 tubes, 4 leather jackets and 2 keys.....\$20 00
9079. Chart of the Natural System of the Elements, arranged by Lothar Meyer and Seubert.....\$1 25
9080. Chart of the Periodic System of the Elements, according to Mendeleeff, 116x85 ctm.....\$1 25
- 9080a. Table of Atomic Weights, compiled by Dr. F. W. Clarke, reported to Am. Chem. Socy., size 42x62 inches, mounted on linen.....\$2 00  
Mounted on linen with rollers..... 2 50
- 9080b. Chart of Periodic Elements, according to Mendeleeff, corrected up-to-date by Dr. F.W. Clarke, American nomenclature, size 42x62 ins., mounted on linen \$2 00  
Mounted on linen with rollers..... 2 50

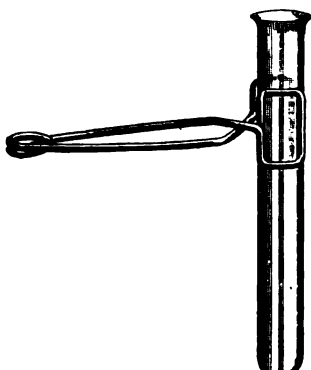


9082

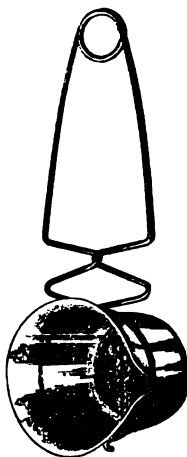


9083

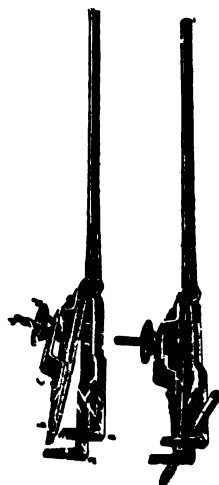
9081. **Clamp, Allihn's Automatic**, double, for burettes; a very convenient form, holding the burette firmly and closing automatically. See Fig. 9048...\$1 50
- \* 9082. **Clamp patent**, for burettes, with rubber rings, also closes automatically.  
 Single..... \$2 00. Double.....\$3 00
- \* 9083. **Ditto**, double, Lunge's, for supporting gas volumeters and other parallel tubes 1 50



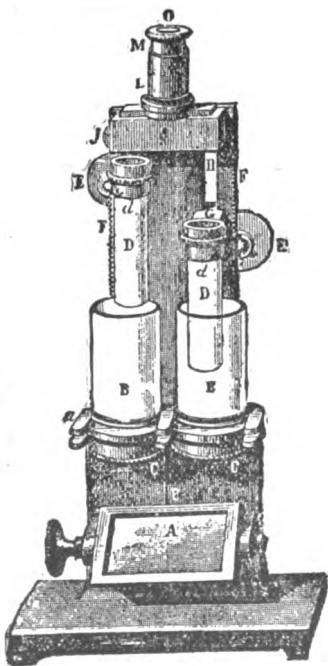
9085



9084



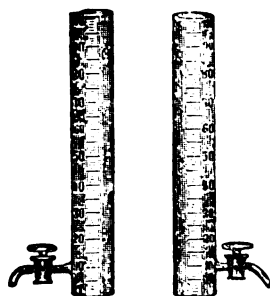
9087



9088



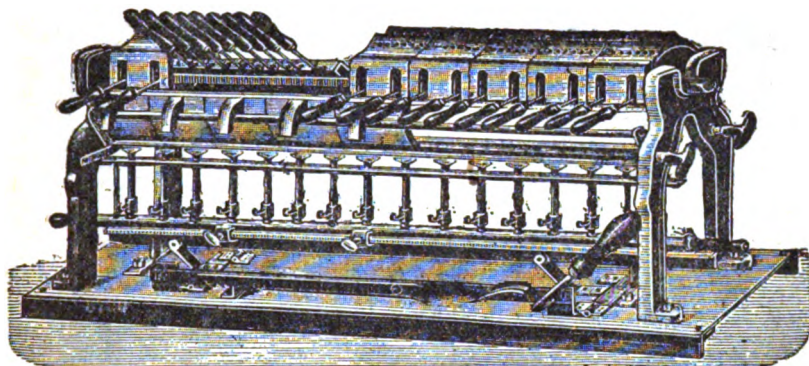
9086



9089

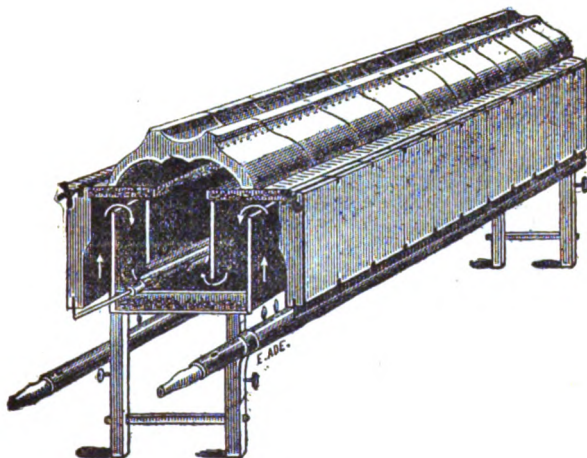
- \* 9084. **Ditto, of spring wire**, nickel-plated for beakers. Small, for beakers, Nos. 1 to 3, each.....\$ .18
- Large, for beakers Nos. 4 to 7, each.....\$ .25

- \* 9085. Clamp, Stoddart's, of spring wire, nickel-plated, for test tubes. Small, for tubes  $\frac{1}{4}$  to 1 inch diameter, each.....\$ .15  
Large, for tubes  $\frac{1}{4}$  to  $1\frac{1}{2}$  inch diameter, each..... .20
- \* 9086. Ditto, Mohr's, with automatic spring catch, which keeps the jaws apart until released, by pressing the knob. Small, each.....\$ .30  
medium..... .35; large..... .40
- \* 9087. Ditto, Ostwald's universal; a very desirable clamp, made of brass, taking tubes of all sizes from 1-8 inch to 2 inch diameter.....\$ 1 25
- \* 9088. Colorimeter, Dubosc-Soleil's..... 80 00
- \* 9089. Ditto, Hohner's, for estimating ammonia in water, consisting of two graduated cylinders with stop-cocks, per pair.....\$ 4 00  
Ditto, Lovibund's, see "Tintometer."



9090

- \* 9090. Combustion Furnace, Fuch's; latest pattern, complete.....\$75 00  
This furnace prevents the combustion tube from cracking or getting out of shape; permits the easy regulation of both heat and the burners, and consumes much less gas than any other form.



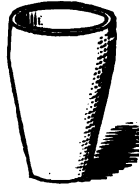
9091

- \* 9091. Ditto, ditto, Lothar Meyer's, taking tubes of various dimensions, and for combustions below a cherry red heat. Length 20 24 32 in.  
Each, \$27 00 30 00 33 00
9092. Condenser, Liebig's, of aluminum, with glass condenser tube.  
Length of body, 16 24 in.  
\$3 75 5 00
9093. Condenser, glass, flat condensing tube sealed in glass body, giving greater surface, same shape as No. 6028.  
Each. 8 10 12 15 20 25 in.  
.85 \$1 00 1 25 1 50 2 00 2 75

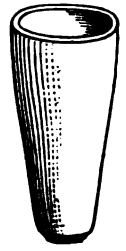
9094. Condenser, Soxhlet's, globe shape, of brass, nickel-plated, very practical for extraction apparatus. (See cut No. 9126 and 9119)..... \$3 00
- 9094a. Crucibles, of Aluminum. All sizes to order. Prices on application.



9095



9096



9097

Crucibles, of Denver fire clay, fully equal to the best imported brands for all assay purposes.

○\* 9095. Lead Assay Crucibles.

(In small barrels.)

	B	A	AA
Capacity,	20 grms.	10 grms.	5 grms.
Height,	3 1/4 in.	3 in.	2 1/4 in.
Diameter,	3 in.	2 1/2 in.	2 1/4 in.
Price, per 100,	\$4 00	3 00	2 50
Covers, per 100,	\$3 50	2 25	2 25
Less than original barrel, 20% higher.			

○\* 9096. Crucibles, for open furnace.

No.	D	E	F	G
Height,	4 in.	4 1/2 in.	5 in.	5 1/2 in.
Diameter,	2 1/4 in.	3 in.	3 1/4 in.	2 1/2 in.
Price, per 100,	\$3 50	5 50	6 00	8 00
Covers,	\$2 25	3 50	4 00	5 00

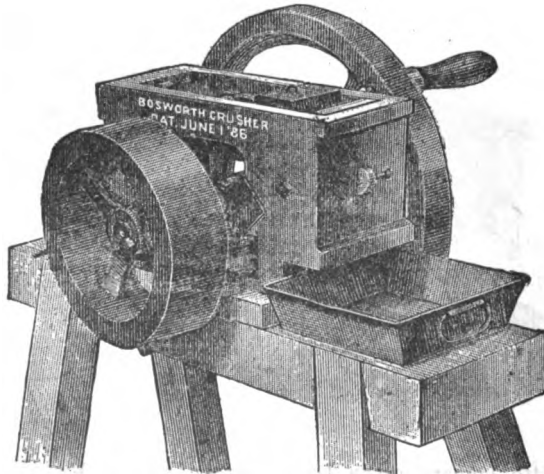
Less than small original barrel, 20% higher.

○\* 9097. Crucibles, French pattern. No.

	6	8	9
Height,	4 in.	5 in.	5 1/2 in.
Diameter,	2 1/4 in.	2 1/2 in.	3 in.
Price, per 100,	\$3 50	7 00	8 00

Less than small original barrel, 20% additional.

9098. Crucible Tongs, double bent, of aluminum. .... \$1 00



9099

- \* 9099. Crusher, Bosworth's; unrivalled for simplicity, strength and durability; more quickly adjusted to crush either coarse or fine and works easier and faster than any other crusher; jaw plates are reversible, a feature not possessed in other machines. Any duplicate part furnished promptly
- Price, for hand power ..... \$32 00. With pulley for power .... \$35 00

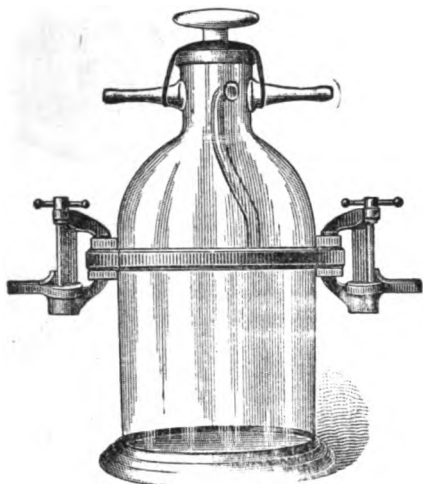


**9099a. Crystal Models, glass, constructed of glass plates, axes indicated by colored silk threads; elegantly made.**

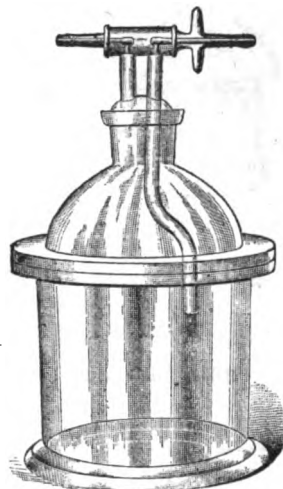
Set of 50.....\$95 00 Set of 100.....\$195 00 Set of 134.....\$250 00

**9099b. Ditto, ditto, of heavy wire, axes indicated by finer different colored wires. Set of 17, each with wooden base, in case.....\$24 00**

**Culture Apparatus, Novy's, for Anserobic Bacteria.**



9099c



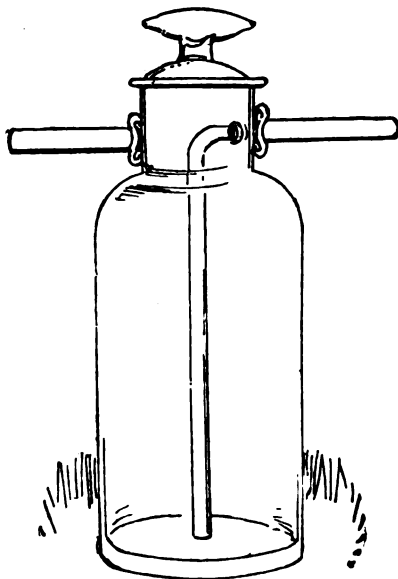
9099d

\* **9099c. For plate cultures, for gas or pyro-gallate method.....\$4 50**

\* **9099d. Ditto, ditto, for gas pyro-gallate or vacuum method..... 5 50**

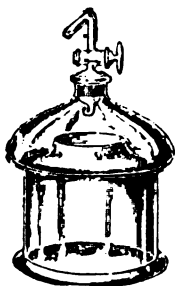
Rubber band and 3 clamps, \$1 25 extra.

This apparatus is also very useful as a desiccator for drying substances in a current of hydrogen or other gases.



90 9e

\* **9099e. For tube cultures. Small size, 8 x 16 ctm., for 12-13 ctm. tubes..... \$2 75**  
**Large size, 10 x 20 ctm., for 15-16 ctm. tubes..... 3 75**



9100



9103a



9101



9102

- \* 9100. Desiccator, Hempel's, a great improvement on the older forms, the absorbent being placed in the upper part, where aqueous vapors accumulate.

4	5	6 in. inside diameter.
\$3 50	3 75	4 25

- 9100a. Ditto, ditto, with glass stopper in place of stop-cock.

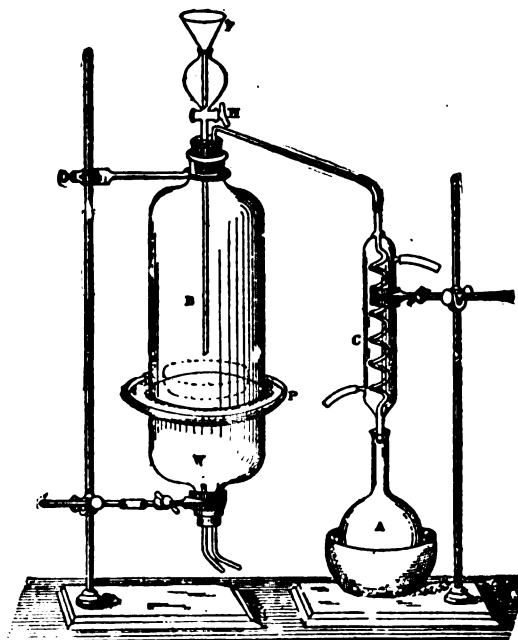
4	5	6 in. inside diameter.
\$1 50	2 00	2 25

- \* 9101. Ditto, with manometer, glass stop-cock and ground glass plate.....\$7 00

- \* 9102. Ditto, Stelling's, for dishes, plates, etc., bell jar 12 in. high x 6 in. diam., complete as in cut.....\$7 50

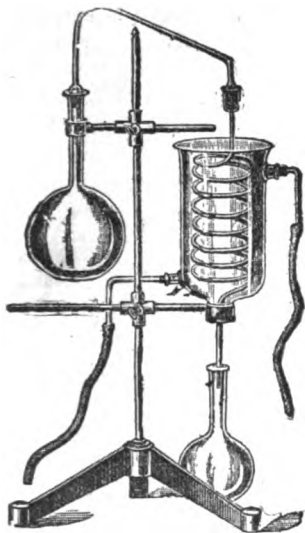
9103. Dishes of Aluminum, all sizes and shapes to order. Prices on application.

- \* 9103a. Dish, Royal Berlin porcelain, with lip curved downwards, for the concentration of sulfuric acid, etc. Diameter, 32.5 ctm., each.....\$4 00



9104

- \* 9104. Distilling Apparatus, for the recovery of volatile solvents used in extraction, glass parts only.....\$5 50



9105

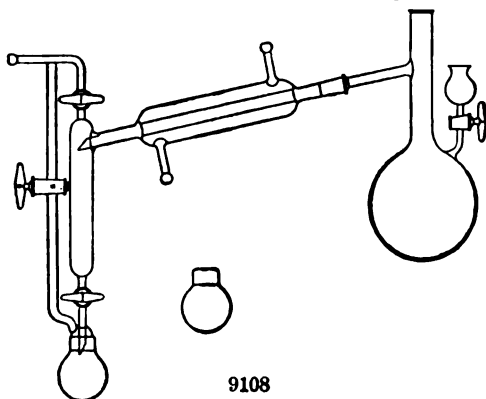
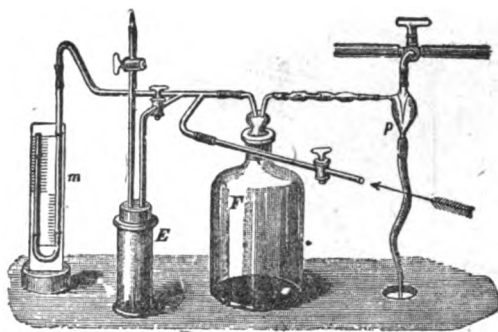
\* 9105. Distilling Apparatus, Muencke's, of glass, with ground joints.

Price without support .....

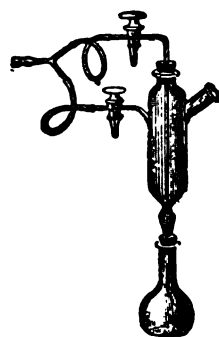
9106

500 c.c.	1000 c.c. capac.
\$6 00	7 50

\* 9106. Ditto, ditto, Kraft & Noerdlinger's, for distillation under diminished pressure \$8 50



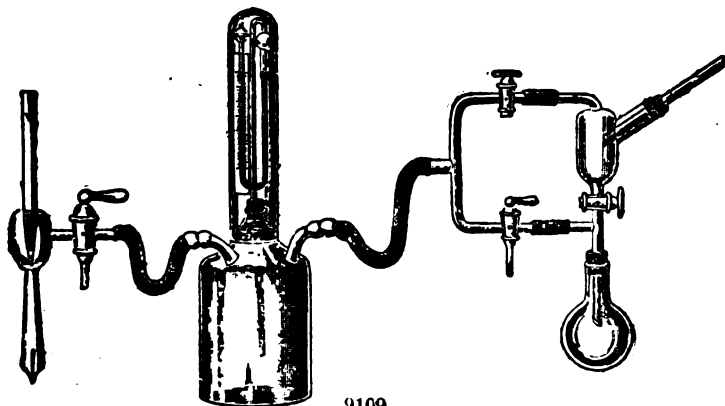
9108



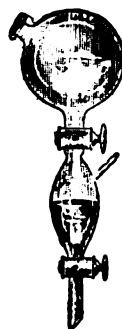
9107

\* 9107. Ditto, ditto, Lothar Meyer's, for distillation under diminished pressure...\$5 00

\* 9108. Ditto, ditto, Axtell's, for fractional distillation under a diminished pressure, complete with one extra flask; a very practical apparatus; all ground joints. \$12 75

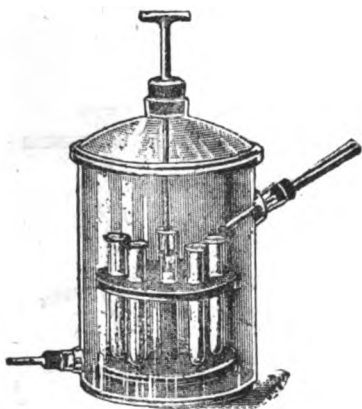


9109

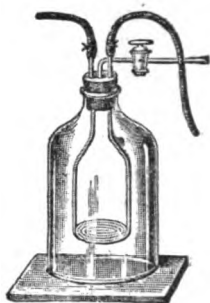


9111

- \* 9109. Distilling Apparatus, Kolbe's, for fractional distillation under diminished pressure, complete as indicated.....\$13 50

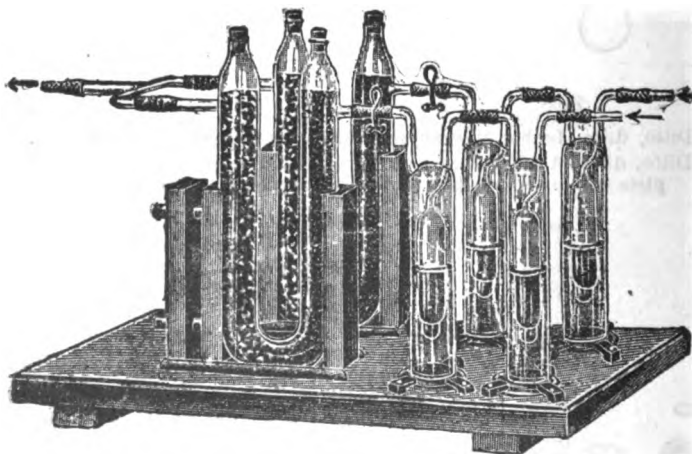


9110



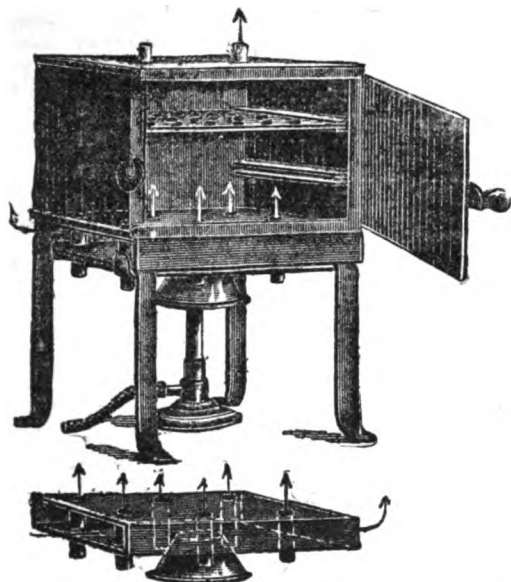
9113

- \* 9110. Ditto, ditto, Bruhl's receiver for distillation in vacuo.  
 Small, with 5 cylinders, 25 c.c. capacity.....\$ 6 75  
 Medium, with 5 " 40 c.c. " ..... 9 75  
 Large, with 5 " 80 c.c. " ..... 12 00
- \* 9111. Ditto, ditto, Fuch's receiver for distillation in vacuo.....\$3 50
9112. Diffraction gratings, according to Prof. H. A. Rowland; all sizes. Prices on application.
- \* 9113. Drying Apparatus, Anschuetz, with heating coil, for drying in vacuo, or in a current of gas.....\$7 50

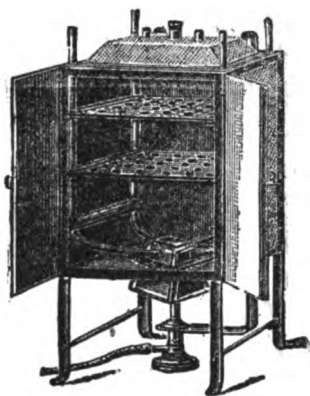


9114

- \* 9114. Ditto, ditto, Tauber's, for Organic Analysis.....\$12 00
- 9115. Drying Oven, of Aluminum, single wall, with support, 25x15x15 cm.\$12 00

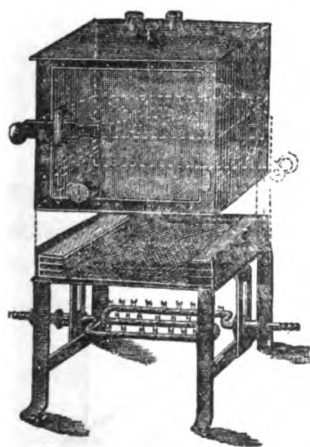


9117

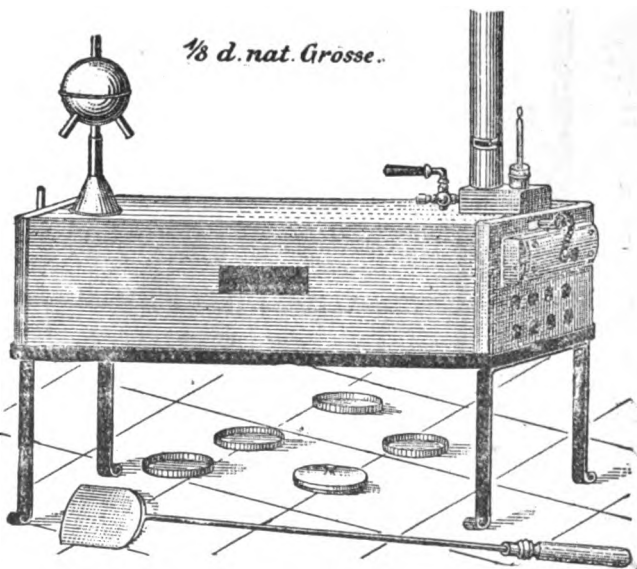


9116

- \* 9116. Drying Oven, Kaehler's, single wall, of sheet iron, asbestos coated, inside dimensions, 12 in. wide, x 12 in. deep, x 18 in. high..... \$35 00.  
Heat is evenly distributed by 4 tubes converging from the centre of the oven, giving an equal temperature throughout.
- \* 9117. Ditto, ditto, Kaehler's, single wall, of copper, with double bottom. The flame strikes the upper or true bottom and heat also circulates between the two bottoms and around the series of connecting tubes, heating the latter, through which a current of hot air enters interior of the oven, maintaining a constant temperature throughout, rapidly removing moisture, and thus insuring quick evaporation. 12x10x10 in..... \$15 00



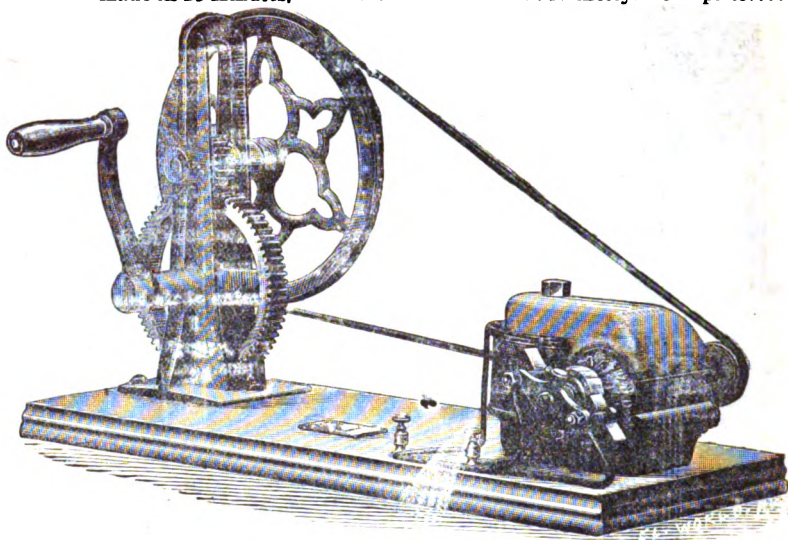
9118

*1/8 d. nat. Grosse.*

9119

- \* 9118. Ditto, ditto, of copper, Ruedorff's, with adjustable coil burner and 3 wire gauge slides for maintaining an even temperature. Size, 8x10 10x12 in.  
\$21 00 25 00

- \* 9119. Drying Oven, of copper, Soxhlet's, with globe shape metal condenser, thermometer, 5 nickel dishes and one cover, and shovel for dishes; the drying chamber 470 m.m. long x 95 m.m. wide x 30 m.m. high, is surrounded by boiling salt solution. For the rapid determination of moisture, at a maximum temperature of 103° C. A determination of the total solids in milk can be made in 18 minutes, instead of 6 or 8 hours as formerly. Complete....\$72 00

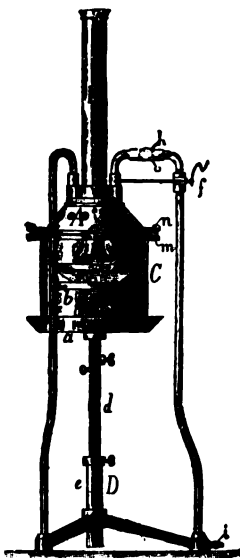


9121

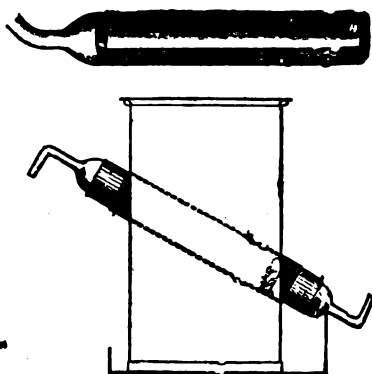
9120. Ditto, ditto, with double wall, copper drying oven, well insulated by felt packing and wooden case, door with spring hinges and latch; inner dimensions, 25x25x25 ctm.; for constant temperatures of 95° C.; heated by steam from the drying apparatus and suspended from the wall above it....\$125 00
- \* 9121. **Dynamo Electric Machine.** This Improved Experimental Dynamo was especially designed for school use; decomposes water, lights incandescent lamps, drives small motors, etc; can also be used as a motor with a battery of 5-15 cells. Price, any voltage, 5 to 25....\$20 00 With hand power....\$25 00  
Special descriptive circular on application.



9122



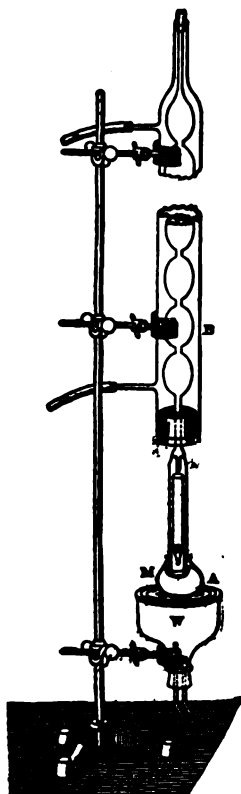
9123



9124

- \* 9122. **Ebullioscope**, for the accurate and rapid estimation of alcohol in wine, beer, etc.,—a determination being obtained in 10 minutes; complete with accessories.....\$70 00

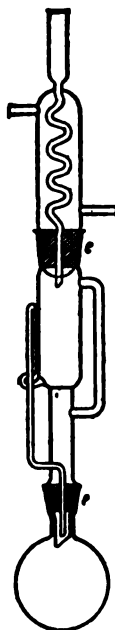
- \* 9123. **Evaporating and Drying Apparatus**, Hempel's, fitted with Siemens' Inverted Regenerative Burner. The flame acts upon the liquid from above; there is neither bubbling nor spouting and the apparatus has a six-fold greater evaporation capacity than a water bath.  
 Size No. 1 for a dish 125 m.m. diam., hourly evaporation, 250 CC .....\$65 00  
 Size No. 2 " 270 " " " 400 CC ..... 80 00
- \* 9124. **Extraction Apparatus**, Caldwell's, for drying substances in hydrogen and for the extraction of fats; includes:  
 1 Copper water bath for 6 tubes.....\$5 00  
 3 Extraction tubes, each..... 1 20  
 6 Double-stoppered tubes, each with two delivery tubes and two stoppers for closing, ground in, each..... 1 65  
 1 platinum disc .....\$0.70 per gramme, according to weight.



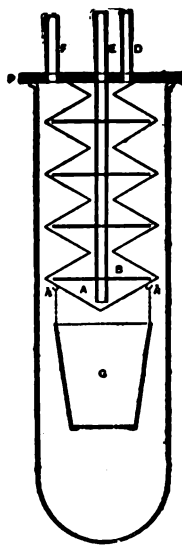
9125



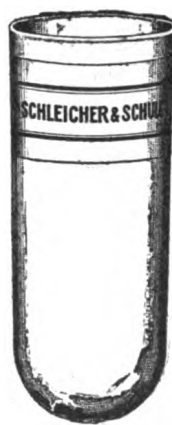
9126



9127

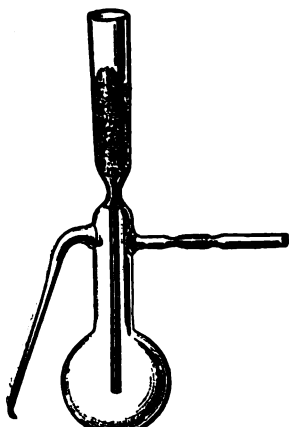


9128



9129

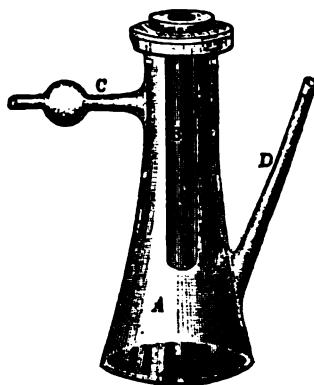
- \* 9125. Ditto, ditto, Knorr's, with ether-tight mercury joints, dispensing with corks and ground joints; glass parts complete.....\$8 00
- \* 9126. Ditto, ditto, Soxhlet's, with ball condenser of brass, nickel-plated.  
 Small.....\$4 70 Medium.....5 00 Large.....5 50
- \* 9127. Ditto, ditto, Soxhlet's, with ground joints and spiral condenser.  
 Medium.....\$6 00 Large.....\$7 50  
 If with one extra ground flask.....\$1 00 more.
- \* 9128. Ditto, ditto, Wiley's; very simple and effective, dispensing with corks and other stoppers; permits, if desired, a double weighing both of residue and extracted matter; moreover the glass tube, the only part likely to be broken, can be replaced at slight cost. Complete with nickel-plated metal condenser and suspended porcelain Gooch crucible, fitted to tube with ground flange, to ensure close connection .....\$5 00
- \* 9129. **Extraction Cartridges**, of fat, free paper, Schleicher & Schnell's make, for use in Soxhlet's and other extraction apparatus, for determination of fat in milk, etc. The use of these tubes renders it impossible for any of the material being extracted to find its way into the solvent. Can be used over and over again. Price, per box of 25, 80x33 mm.....\$2 00



9130b



9129a



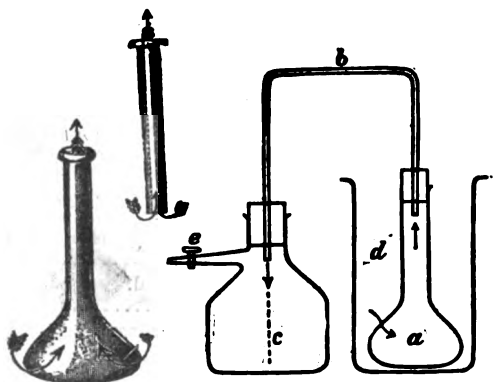
9130a



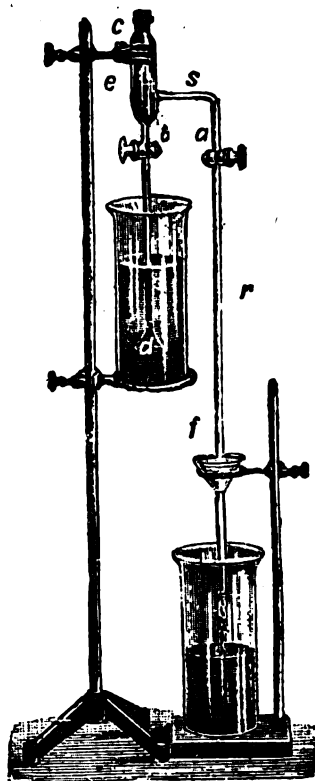
9130



9131



9134-5



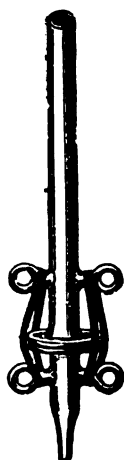
9132

- \* 9129a. Fermentation Tube, Smith's. Small, 5 in. high.....30 cts.  
 Large, 7 in. high.....40 cts.
- \* 9130. Filtering Apparatus, of Royal Berlin porcelain, for use with filter pump  
 or by gravity, for inverse filtrations, etc. Diam. 4 in. 8 in.  
 \$2 00 5 00
- \* 9130a. Ditto, ditto, Muencke's, germ proof, for bacteria.....\$3 06
- \* 9130b. Ditto, ditto, Pasteur's form.....1 50

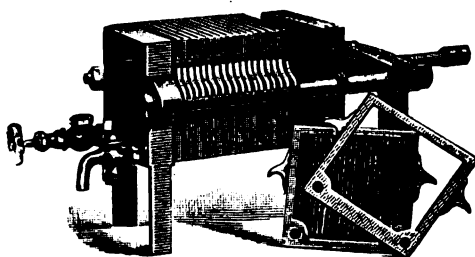
Kinyoun's, Kitasato's and other Germ-proof Filters also on hand.



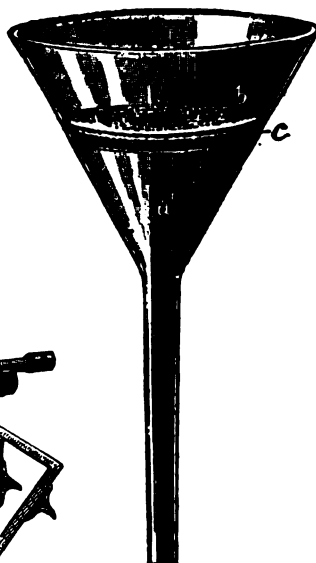
- \* 9131. **Filtering Bath**, for inflammable fluids, to heat by steam contents of a funnel from a distance .....\$5 00
- \* 9132. **Filtering and Decanting Apparatus**, Saullman's, for ascending filtration and decanting from precipitates; continuous action.  
Complete.....\$7 50. Glass parts only.....\$5 00
- \* 9134. **Filter Flask**, of porous Royal Berlin porcelain.  
Small..... .40 Medium.. .75 Large..... 2 00
- \* 9135. Ditto, cylindrical form, each..... .85



9136



9138



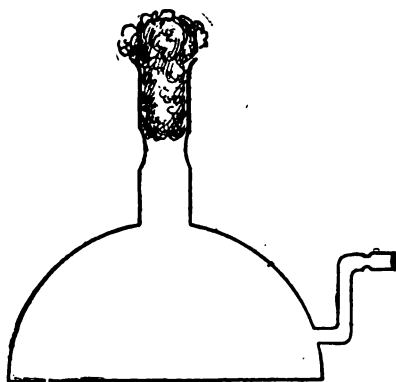
9137

- \* 9136. **Filter Pipette**, for micro-chemical filtration..... .75
- \* 9137. **Filter Plates**, Kaehler's, of perforated porcelain, with rubber ring, ensuring close contact with sides of funnel. Diameter, 4 5 6 8 10 ctm.  
Each, .40 .45 .50 .75 \$1 00  
Extra rubber rings, 5 and 10 cts. each, according to size.
- \* 9138. **Filter Press**, E. & A.'s new form, working by gravity and specially designed for filtering large quantities of solutions containing only a small amount of sediment. With this filter press, using either filter paper or cloth, perfectly clear filtrates are obtained, and it is so arranged, that either one compartment only, with a filtering area of 32 square inches, or any number up to its full capacity, with a filtering area of 2½ square feet, may be used. Indispensable to manufacturing Pharmacists and others for the purpose indicated \$25 00; 1 set filter cloth and paper, \$2.50 extra.
- Filter Paper, Schleicher & Schuell's new brands.**
9139. **No. 589**, "Blue ribbon," of closer fibre than the ordinary No. 589, and though not filtering so rapidly as the latter, will retain the finest precipitates.  
5 7½ 9 11 12½ 15 ctm. diam.  
.60 .70 .90 \$1 10 1 35 1 60 per pack of 100 sheets
9140. **No. 589**, "Yellow ribbon," similar to the ordinary No. 589, but also washed with ether—prices same as for No. 590. Sec No. 6302a.
- 9141. **No. 575, Hardened Filters**. Even in a damp state, these filters are almost as hard and durable as parchment and stand a pressure of 2 to 3 atmospheres, at the same time retaining the finest precipitates. Especially adapted for filtering large quantities without fear of tearing; moreover, they can be used over and over again, as the precipitate can be scraped off, without removing stuff from the paper. The smaller sizes, 4-7 ctm., may be used in place of a platinum cone, or as a support for large folded filters.
- |     |        |      |      |        |      |                              |
|-----|--------|------|------|--------|------|------------------------------|
| 4   | 5½     | 7    | 9    | 11     | 12½  | 15 ctm. diam.                |
| .50 | .60    | .70  | .90  | \$1 00 | 1 10 | 1 25 per pack of 100 sheets. |
|     | 18½    | 24   | 27   | 32     | 38½  | 50 ctm. diam.                |
|     | \$1 65 | 2 50 | 3 30 | 4 05   | 5 25 | 8 75 per pack of 100 sheets. |

9142. **No. 566, Filter paper in rolls; 50 metres long, 65 ctm. broad and 0.23 m.m. thick.** Price per roll .....\$6 00  
An extra soft and quick filtering paper, especially adapted for filtering large quantities of liquids, containing not much sediment.
9143. **No. 601, Drop Reaction paper, in sheets, 22x14 ctm.** This paper quickly absorbs drops of liquids without spreading, and is better adapted and more accurate for drop tests, than the old method of using a porcelain plate.  
Price, per sheet .....5 cts. Per quire .....75 cts. Per 100 sheets.....\$2 00
9144. **Filter Paper, Munktell's, Swedish, No. O.** Washed with hydrochloric acid. A uniform and quick filter, retaining fine precipitates. 100 filters in a package, 5 packages in a box. Diam. 5.5 7 9 11 12½ 15 18.5 cm.  
Price per 100 sheets, .20 .27 .42 .55 .63 .85 \$1.25
9145. **Filter Pump, Richards', extra large size, very powerful, and adapted for exhausting large vessels, where a good water pressure is available...**\$10 00  
Flasks, of Jenna, normal glass. See No. 9182-5.  
Ditto, Weber's, Resistance glass. See No. 9192-3.
9146. **Flask, graduated, with blue line, on white enameled background, giving a sharp meniscus.**
- |            | 10  | 25  | 50  | 100 | 200 | 250 | 500 | 1000 CC.  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----------|
| Plain,     | .20 | .25 | .30 | .35 | .50 | .60 | .75 | .90 each. |
| Stoppered, | .30 | .35 | .40 | .45 | .65 | .75 | .90 | \$1 00 "  |



9146a

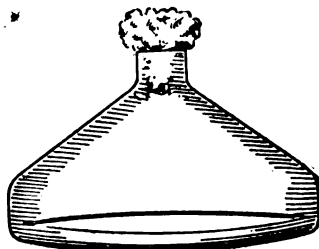


9146b

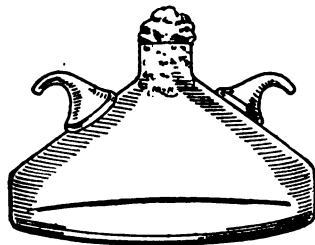
\* 9146a. Ditto for cultures, Billings', with stopper and ground helmet.

100	200	400 CC.
.50	.60	.75 each.

\* 9146b Ditto, Fernbach's, for Antitoxine Culture. \$1 50 each. 15 00 doz.



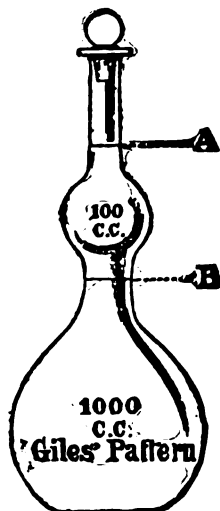
9146c



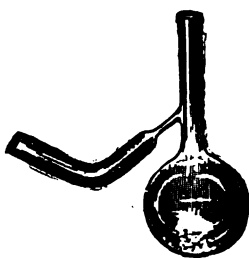
9146d

\* 9146c. Ditto, ditto, latest pattern, about 8 in. diam. x 5 in. high. Capacity, 1500 CC.  
Plain.....\$1 25 each. Dozen.....\$12 00

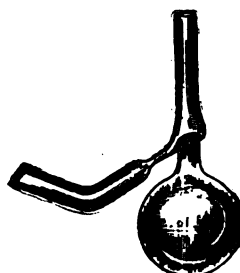
\* 9146d. Ditto, ditto, with side-necks.....\$1 50 each. Dozen.....15 00



9147



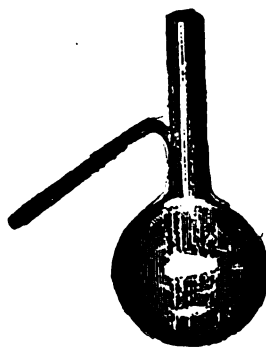
9148



9148a



9149



9149a

- \* 9147. Flask, Giles', of 1100 CC. capacity, graduated at 1000 CC. and 1100 CC. Its value in making normal solutions is obvious; by taking one-tenth more of the reagent than would be used for making one litre of normal solution, and then filling up to the 1100 CC. mark, there is obtained 100 CC. of solution for ascertaining exact litre, leaving exactly one litre for correction.....\$1 50

Ditto, 500x550 CC. \$1 25; 2000x2200 CC. \$2 75.

- \* 9148. Ditto, distilling, Anschuetz'.

Capacity,	1	2	4 oz.
Each,	.25	.30	.40

- \* 9148a. Ditto, ditto, ditto, with trap.

Capacity,	1	2	4 oz.
Each,	.35	.45	.55

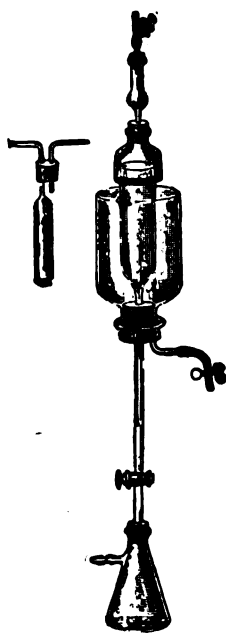
- \* 9149. Ditto, ditto, Lunge's, with trap.

Capacity,	2	4	8	16 oz.
Each,	.30	.40	.50	.65

- \* 9149a. Ditto, ditto, Emery's, with tube bent, to prevent liquids spouting over.

2	4	8	16	32 oz.
.20	.25	.40	.50	.75 each.

- \* 9149b. Forceps, Cornet pattern, the best for handling micro covers.....\$0.60

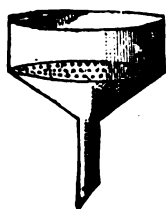


9150

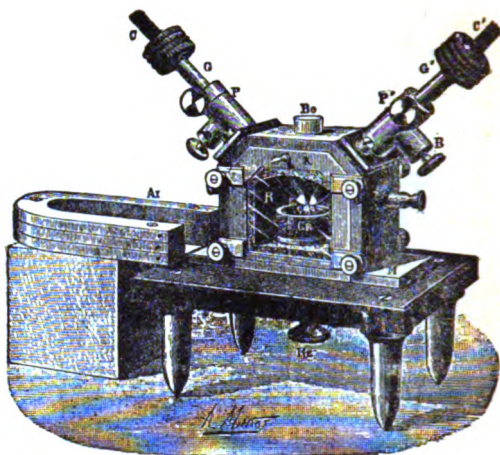


9149b

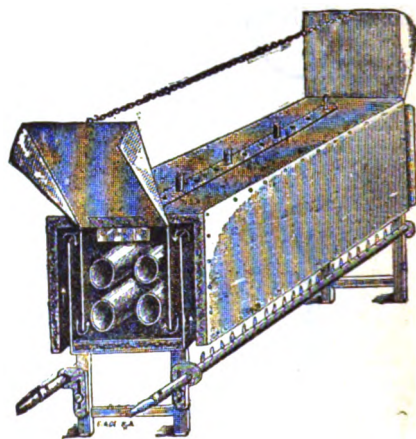
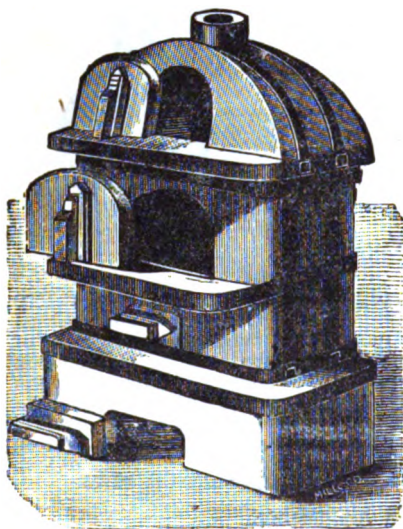
- \* 9150. Freezing Apparatus, Bruhl's; to promote crystallization of substances in solution, through cold, and to saturate fluids at low temperatures with gases, thereby preparing solids formed in a pure state.....\$6 00



9150a



9151



9153

- \* 9150a. Funnel, Buchner's, of porcelain; the disc of filter paper is laid flat, giving a large surface and ensuring rapid filtration.

10	15	20 ctm. diam.
\$1 50	2 25	4 50 each.

- 9150b. Ditto, hot water funnel, of aluminum, fitted with glass funnel.
- |        |        |
|--------|--------|
| 4 in.  | 6 in.  |
| \$3 50 | \$4 00 |

- \* 9151. Furnace, Electric, Moisson & Viollet's; invaluable to the chemist and metallurgist, for the fusion of refractory substances and all investigations requiring extreme high temperatures.

a. Small size, for cupel-shaped crucibles, 35 m m. outside diameter; adjustable base; complete with one each carbon and lime crucibles.....\$50 00

Compound Magnet, for keeping metals under control, extra.....12 50

Extra carbon or lime crucibles, each......75

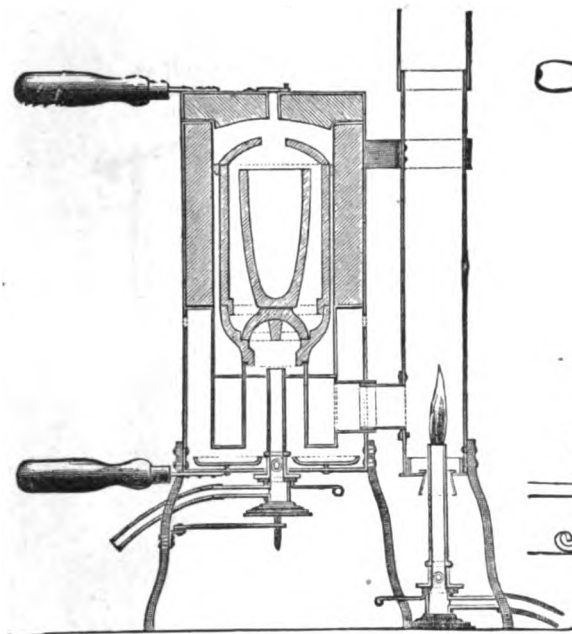
Extra plumbago or magnesia crucibles, each.....1 00

b. Large size, for currents of great intensity, taking crucibles 6 ctm. outside diam; adjustable base; complete with one each carbon and lime crucibles, \$125 00

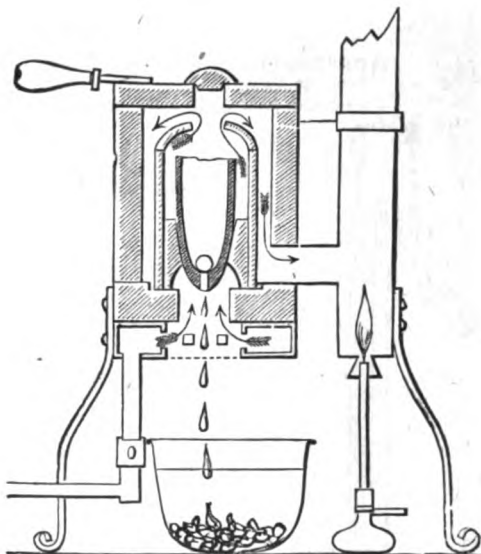
Compound Magnet for keeping metals under control, extra.....25 00

Extra crucibles of carbon, each, \$3 50; of plumbago, each, \$5 00; of lime, each, \$3 00; of magnesia, each, \$4 00.

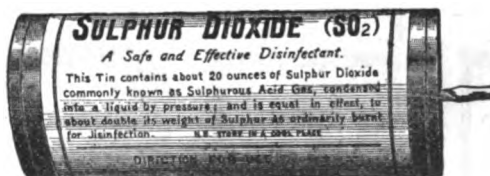
- \* 9152. **Furnace, of Denver fire clay, taking the largest muffles, in three sections, securely bound.** The construction is such that it is less liable to crack than other furnaces. Very durable and convenient, heating the muffle quickly and evenly. Uses 9x15 in. muffle. Can be made to use 10x16 in. if desired. Weight, 650 lbs. Securely packed.....\$40 00
- \* 9153. **Ditto, Lothar Meyer's, of iron, asbestos-coated, for tubes, with adjustable burners and iron shutters, length of tubes, 25 in., diam., 1½ in.**
- With 4 tubes.....\$30 00      With 8 tubes.....\$40 00



9154



9154a



9155

- \* 9154. **Ditto, Dr. Roessler's New Gas Fusion Furnace, reaching a temperature of about 1800° in the furnace and 1100° in the Crucible, melting pure gold without making use of an air blast.** Artificial draught is caused by a small Bunsen burner, the air admitted to the fusion burner being heated before reaching the burner. Silver will melt in about 15 minutes, pure gold in 20, and an alloy of 9-10th gold and 1-10th platinum will melt in 40 minutes. **This is the Best Furnace for Fusions in Platina Crucibles.**

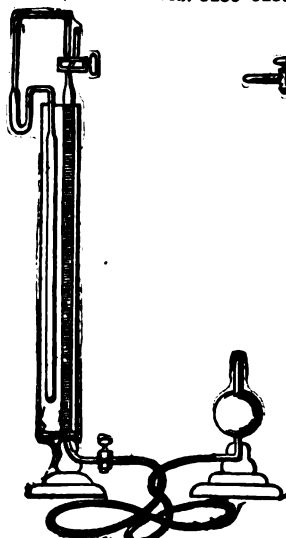
For crucibles	No. I.	No. II.	No. III.	No. IV.—Takes at a time 3
holding	50 grammes.	150 grammes.	2 kilo metal.	crucibles of the size as
Price, complete,	\$22 00	24 00	28 00	used in No. 1, \$35 00.

- \* 9154a. **Ditto, ditto, for fluxes, Enamels and Glazings.** The principle is the same as in the above furnace, but the heating burner being in this case eccentric and the crucible provided with a hole in the bottom, allowing the molten mass to flow in a vessel of water below. Though the capacity of the crucible is only about 3 oz. several pounds of fluxes can be melted in an hour, as the oil may be readily recharged without removing it from the furnace. Price complete.....\$30 00

- \* 9155. **Gas, liquefied sulfur dioxide, ( $\text{SO}_2$ ).** In sealed tins containing 20 oz., at 50c. each..... \$6 00 per doz.
- 9155a. **In glass syphons,** containing about 3 lbs. at 50c. per lb.; syphons extra, \$2 50 net.
- 9155b. **In iron cylinders,** containing 10 lbs. at 45c. per lb.; cylinder extra, \$2 50 net.  
In iron cylinders, containing 15 lbs. at 40c. per lb., cylinder extra, \$3 75 net.
- 9155c. **In steel cylinders,** containing 200 lbs. at 20c. per lb.; cylinder extra, \$25 00 net.

## GAS ANALYSIS.

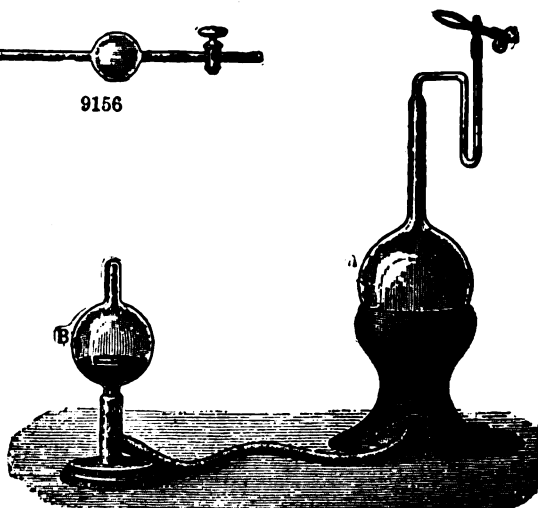
**Apparatus for Gas Analysis, according to Dr W. Hempel, as described in his work "Methods of Gas Analysis," translated by L. H. Dennis.**  
(See also Nos. 5233-5239 of general catalogue.)



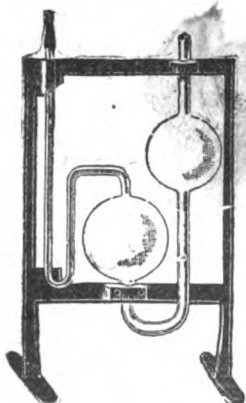
9159



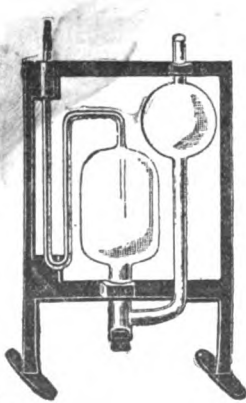
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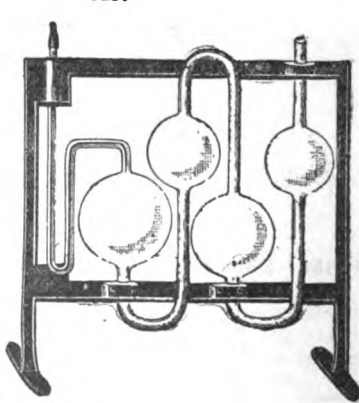
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9160



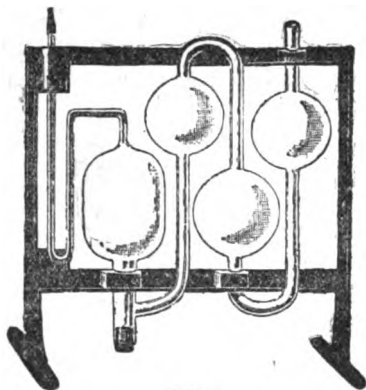
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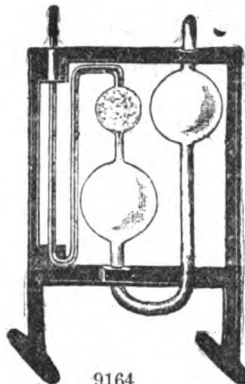
9162

- \* 9156. **Gas Collection Tube.** (Fig. 14)..... \$3 00
- \* 9157. **Gas Holder, complete, as cut.** (Fig. 15)..... 4 00
- 9158. **Gas Burette, with stop-cocks and levelling tube, both on wooden bases** (see cut No. 5233-1 of general catalogue). (Fig. 18)..... \$7 50
- Ditto, ditto, without stop-cock. (Fig. 17)..... 5 00
- \* 9159. **Ditto, ditto, with attachment for temperature and pressure correction.** (Fig. 19)..... \$10 00

We now furnish all forms of Hempel's gas pipettes mounted in iron frames, which are steadier and much more durable than those of wood; moreover, in case of breakage, they are more easily fitted with new pipettes than the wood frames.

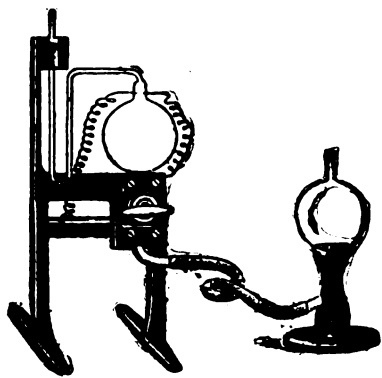


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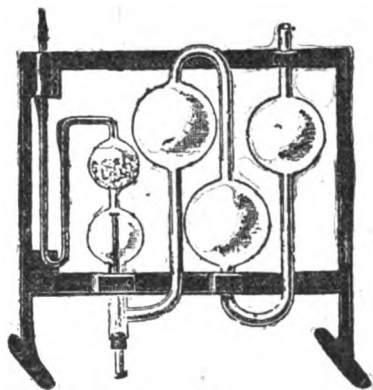


9164

- \* 9160. Absorption Pipette, plain. (Fig. 20).....\$2 75
- \* 9161. Ditto, ditto, for solid and liquid reagents. (Fig. 21)..... 3 00
- \* 9162. Ditto, ditto, compound. (Fig. 22)..... 4 00
- \* 9163. Ditto, ditto, ditto, for solid and liquid reagents. (Fig. 23)..... 4 00
- \* 9164. Ditto, ditto, for Ethylene, with glass beads. (Fig. 60)..... 3 50

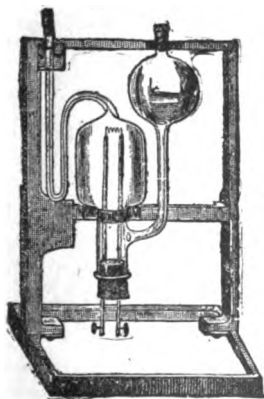


9165

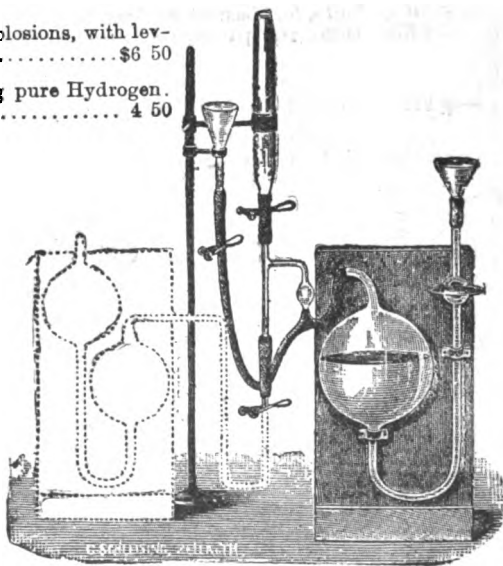


9166

- \* 9165. Absorption Pipette, for explosions, with leveling bulb. (Fig. 44).....\$6 50
- \* 9166. Ditto, ditto, for preparing pure Hydrogen. (Fig. 45)..... 4 50

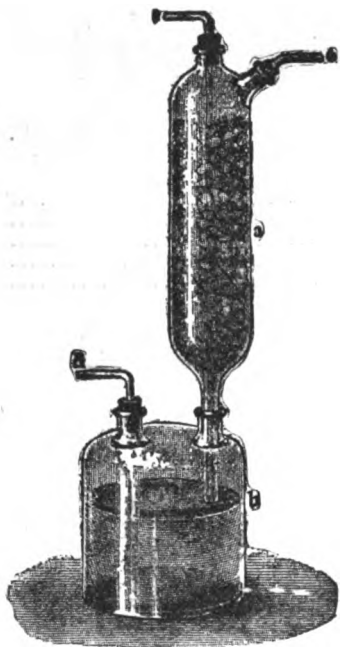


9167

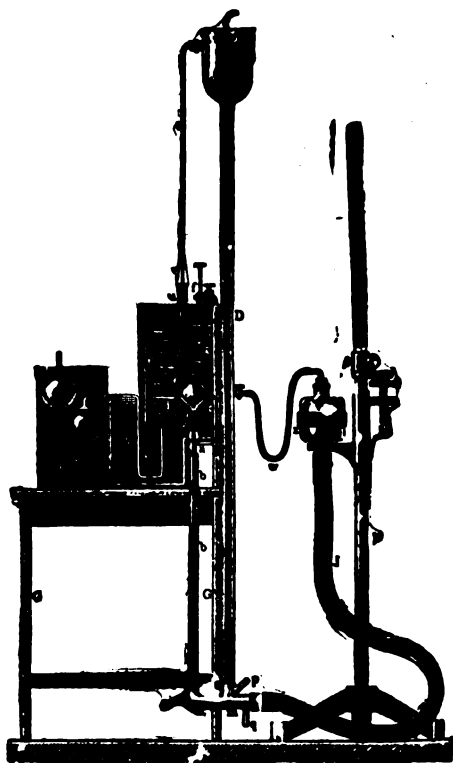


9168

- \* 9167. Absorption Pipette, for estimation of methane (Fig. 66), with platinum spiral, \$5 00  
 —\* 9168. Apparatus, for determination of oxygen by the exact method. (Fig. 51). \$7 50

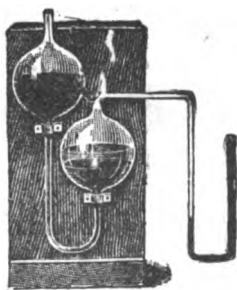


9169



9171

- \* 9169. Ditto, for absorption of gases. (Fig. 41).....\$3 00  
 — 9170. Ditto, for purifying mercury by distillation—mounted on board. (Fig. 36) \$15 00  
 —\* 9171. Complete Apparatus, for exact Gas Analysis over mercury, with barometer, including all accessories not shown in out. (Fig. 25)...\$192 50  
 — Ditto, without barometer..... 137 50

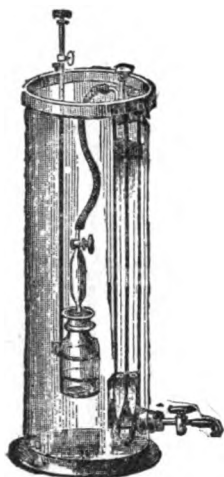


9172

- \*9172. Absorption Pipette, for exact analysis over mercury. (Fig. 28).....\$3 50



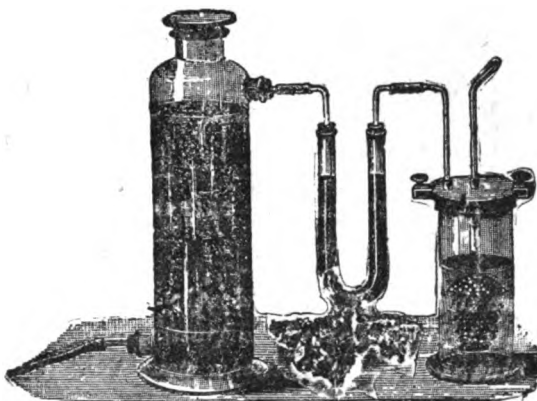
- 9173. Absorption Pipette, for solids. (Fig. 30).....\$3 00  
 —9174. Ditto, d.tto, for explosion. (Fig. 31)..... 4 00  
 —9175. Ditto, ditto, for hydrogen. (Fig. 47)..... 4 60



9176

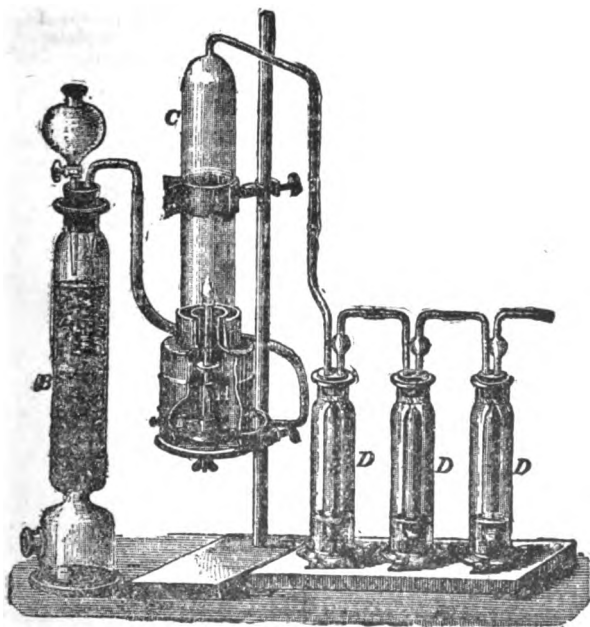


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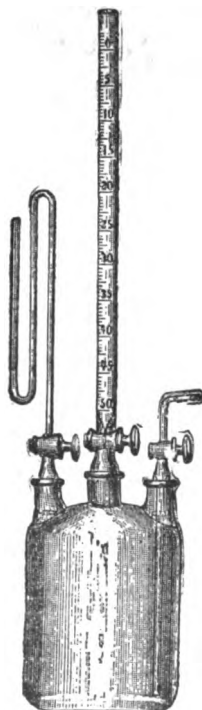


9178

- \*9176. Apparatus, Knopf's, for determining  $\text{NH}_3$ . (Fig. 57).....\$22 50  
 \*9177. Ditto, Schilling's, for determining specific gravity of illuminating gas. (Fig. 64).....\$18 00  
 \*9178. Ditto, for determining tar in unwashed gases. (Fig. 66)..... 15 00  
 Gas balance according to Lux. (See No. 9014).

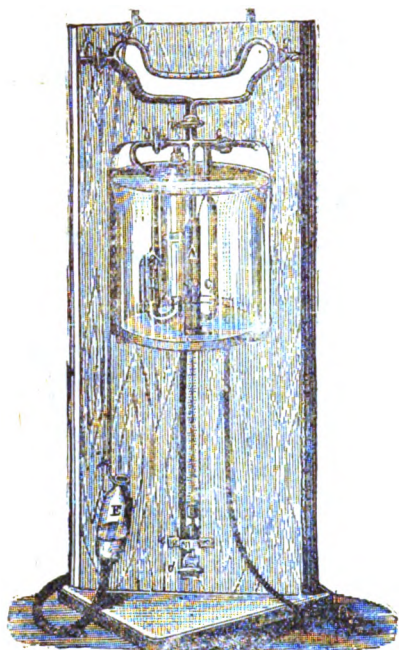


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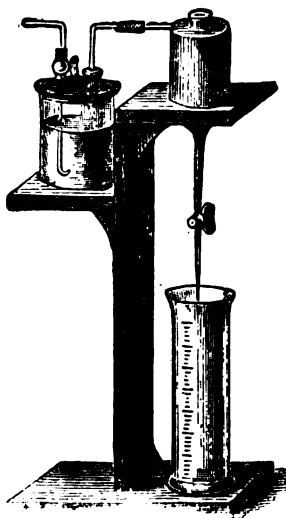


9180

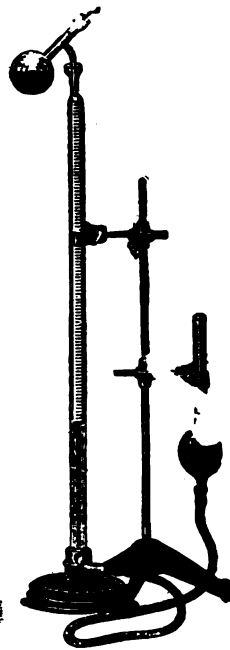
- \*9179. Ditto, Drehschmidt's, for determining sulphur in coal gas. (Fig. 68)..... \$30 00  
 —\*9180. Ditto, Ruedorff's, for determining  $\text{CO}$ , or moisture. (Fig. 69)..... 10 00



9182

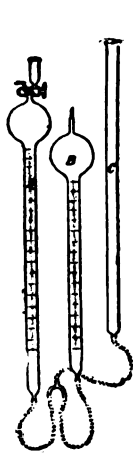


9181

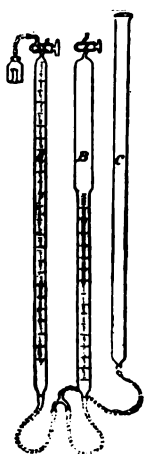


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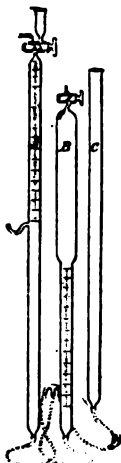
- \* 9181. Apparatus, Reich's, for determining  $\text{SO}_2$  in lead chambers. (Fig. 71)... \$12 50  
 \* 9182. Ditto, Petterson & Palmquist's, for exact determination of  $\text{CO}_2$  in air. (Fig. 81) \$48 00  
 \* 9183. Fluormeter, Oettel's, for the volumetric determination of fluorine. (Fig. 86), glass parts ..... \$4 75. Complete with support ..... \$6 00  
**Gas Volumeters, according to Lunge, designed for the direct reading of the volume of gas, and requiring no correction for temperature and pressure. Most carefully made and provided with patent stop-cocks. Prices in every instance are for glass parts complete. Tables for calculating value of readings furnished with each apparatus.**



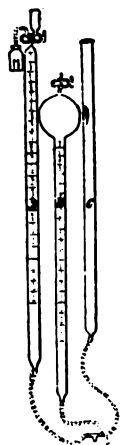
9184



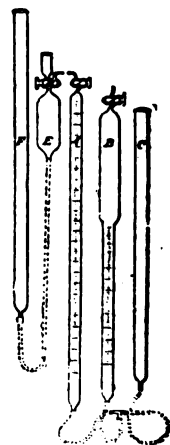
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9186



9187

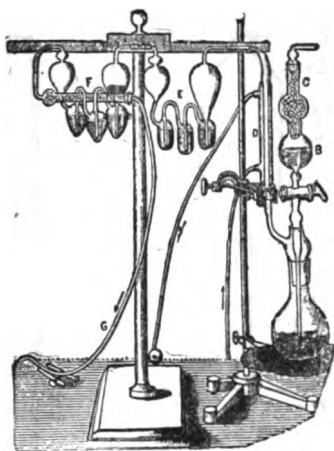


9188

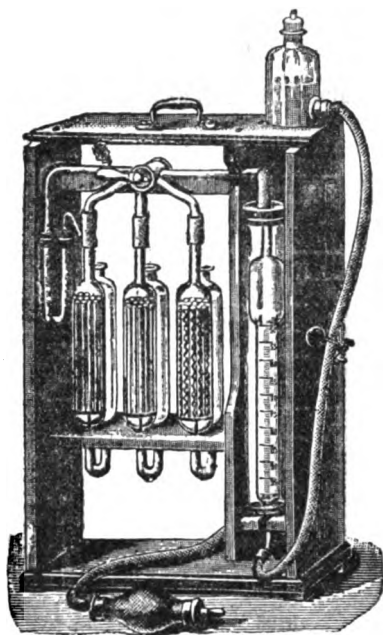
- \* 9184. **Volumeter**, for the analysis of Nitre and other soluble salts ..... \$8 25  
 — \* 9185. Ditto, for the analysis of Pyrolusite, Chloride of Lime and other difficult soluble substances ..... \$9 50  
 — \* 9186. Ditto, for the determination of Nitrogen in Elementary Organic Analysis ..... 10 00  
 — \* 9187. Ditto, for the analysis of both difficult and readily soluble substances, as Pyrolusite, Chloride of Lime, Charcoal, Plaster, Urine, Carbonates and Nitrates ..... \$10 00  
 — \* 9188. Ditto, for analysis of Nitre, Nitrose, Nitrocellulose and Dynamite ..... 12 50  
 — 9188a. Ditto, for determination of  $\text{CO}_2$  ..... 6 00



9189

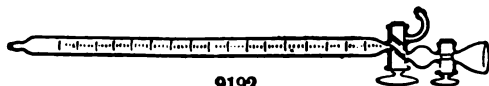


9190



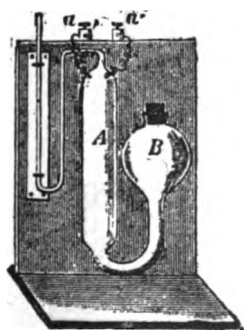
9191

- \* 9189. Gas Tube, Cooper's, modified by Chollar, for approximately determining constituents of illuminating gas; made in three sizes, bulb part having 90%, 75% and 50% of total contents respectively, each... \$3 50
- \* 9190. Apparatus, Knorr's, for determination of  $\text{CO}_2$  in carbonates, by absorption, glass parts... \$9 00
- \* 9191. Apparatus, Orsat-Muencke, Petrizilka's modification, with large universal stopcock, dispensing with 4 smaller ones—complete in case... \$33 75

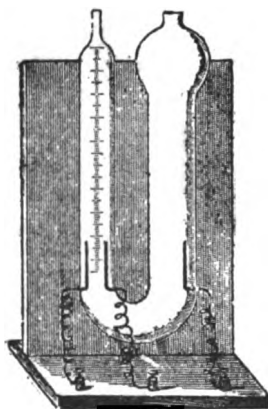


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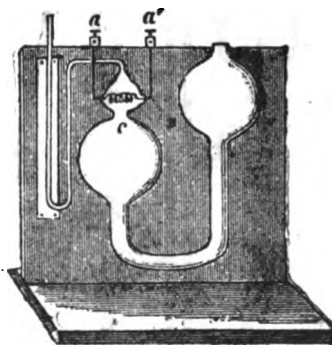
- \* 9192. Apparatus, Horn's, for estimation of N in gunpowder, etc., with levelling tube, 8 25



9193a



9193b

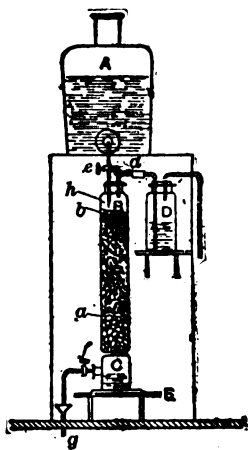


9193c

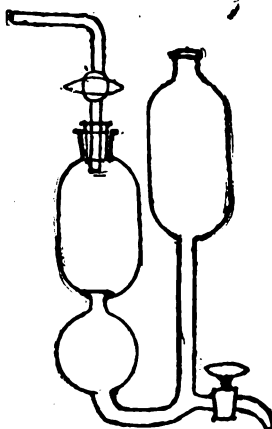
9193. Apparatus, Thörmann's, see Fischer's "Zeitschrift für Angew. Chemie," 1889, pp. 641-643.

- \* 9193a. Explosion Pipette... \$4 50
- \* 9193b. Electrolytic Decomposition Apparatus... 6 00
- \* 9193c. Ignition or Combustion Pipette... 5 00

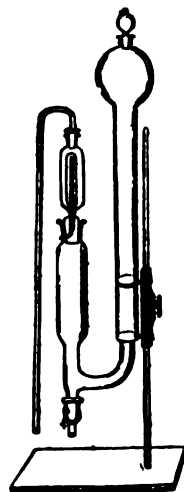
9194. **Apparatus, Elliot's, for the analysis of Furnace and Illuminating Gases.** A small and compact modification of this well-known apparatus has lately been designed by Dr. A. H. Elliot for travelling. Complete with explosion/burette.....\$24 00
- 9194a. Ditto, in fine case, complete .....\$35 00



9195

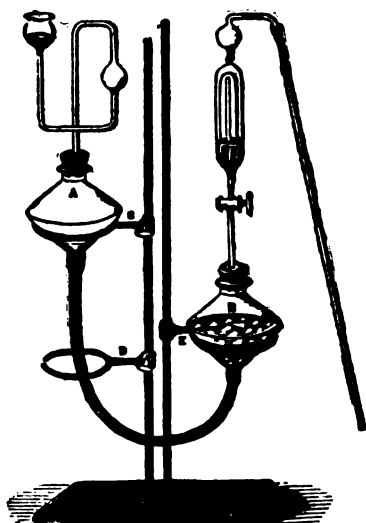


9196

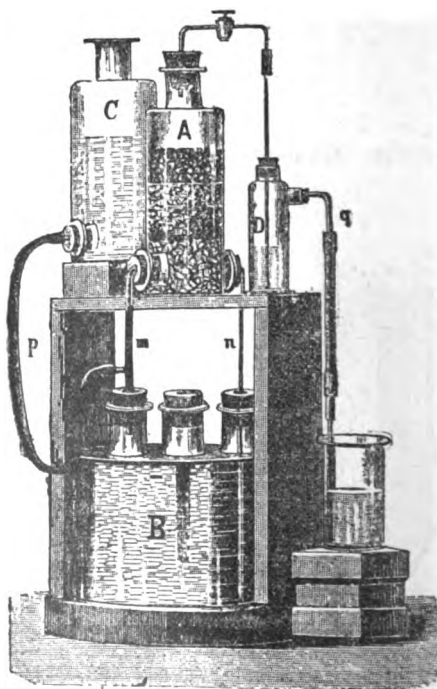


9199

- \* 9195. **Gas Generator, Dudley's, for sulphuretted hydrogen, etc.,** consists of a one gal. tubulated bottle for acid, an 18 in. chloride calcium jar, wash bottle, two glass stop-cocks, rubber stoppers and fittings—complete without support. \$6 50
- Operated by allowing dilute acid to trickle slowly through the column of iron sulphide, by which time it is spent and passes out at the tubulus, preventing the formation of crystals of iron salts, so troublesome in other forms of  $H_2S$  apparatus support extra. ....\$5 00
- \* 9196. Ditto, ditto, Hind's, for  $H_2S$ . (See Journal Analyt. Chemistry, May 1895)... 7 50



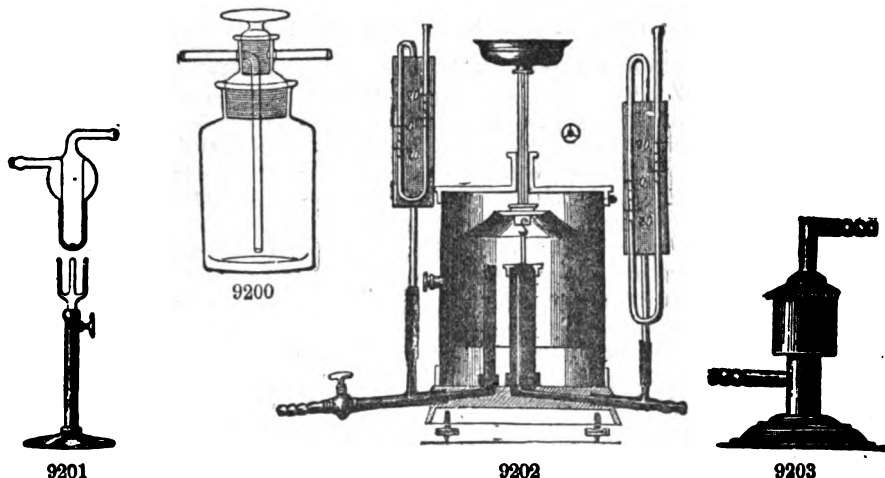
9197



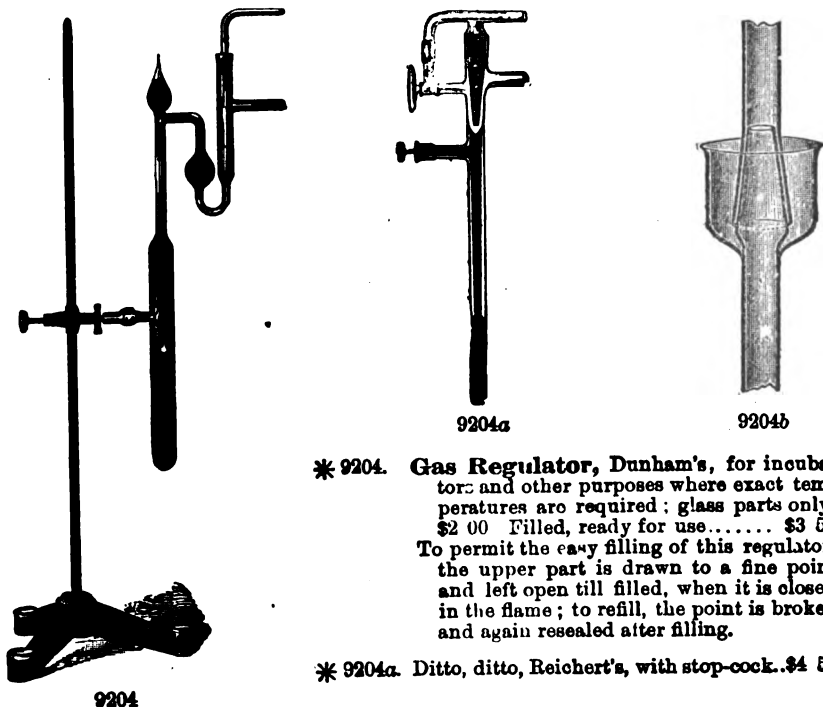
9198

- \* 9197. Ditto, ditto, Kaehler's, with support.....\$9 00 Without support....\$6 00

- \* 9198. Gas Generator, de Koninck's, complete ..... \$12 50  
Designed to give a constant and uniform current of gas, this apparatus also provides for the removal of spent acid, which passes from the Generator into the lower vessel, and being of a heavier specific gravity than the fresh acid, sinks to the bottom and may be syphoned off.
- \* 9199. Ditto, ditto, Norblad's, glass parts.      Capacity,      1      2 litre.  
Each,      \$8 00      12 00



- \* 9200. Gas Washing Bottle, Greiner & Friedrich's, latest form.  
Capacity,      500      1000      2000 CO.  
Each,      \$2 25      3 00      3 75
- \* 9201. Ditto, ditto, tube, Habermann's.....\$0 75      With support.....\$1 50
- \* 9202. Gas Pressure Regulator, Moitessier's.....18 00
- \* 9203. Ditto, ditto, Girond's..... 4 00



- \* 9204. Gas Regulator, Dunham's, for incubator and other purposes where exact temperatures are required; glass parts only, \$2 00 Filled, ready for use..... \$3 50  
To permit the easy filling of this regulator, the upper part is drawn to a fine point and left open till filled, when it is closed in the flame; to refill, the point is broken and again resealed after filling.

- \* 9204a. Ditto, ditto, Reichert's, with stop-cock. \$4 50

**GLASSBLOWING.** We have the best equipped shop in the United States right on the premises, and are prepared to promptly fill orders for scientific glassblowing and accurately graduated apparatus. Apparatus with ground joints will be made if requested, with mercury seal as per cut No. 9204b, ensuring an absolutely tight connection.

EIMER & AMEND, Sole Agent for the U. S.

**GLASS.—JENA LABORATORY GLASS WARE.**—From the factory of Schott & Genossen, Jena, Germany; possessing great resistance to variation in temperature and chemical corrosion. Thus medium-sized flasks containing boiling toluidine (200° Celsius) as a rule bear immersion in cold water, and vessels of this glass may be used with the naked flame of a Bunsen Burner without wire gauze, saving both time and gas. Moreover, official experiments prove that this glass resists the action of water at ordinary temperature four to five times as well as the best Bohemian glass and at 80° Celsius, eleven to twelve times as well. Treatment with caustic lye shows a slight superiority in favor of Bohemian glass, but the Jena glass resists alkaline carbonates three times as well.

Each article bears the trade mark of Schott & Genossen.

Trade Mark



The capacity of each vessel is indicated in the centre of our trade mark.

Trade Mark



- 9205. 1) **Bolling Flasks.** a. with flat, b. with round bottoms. Flasks not exceeding 1500 grammes in capacity have lipped necks, larger flasks have welted necks.

Approximate capacity,	50	100	200	300	400	500	700	
Price each,	.12	.13	.17	.22	.26	.30	.35	cts
Approximate capacity,	1	1½	2	3	5	6	8	10 15 Litre.
Price each,	.43	.48	.55	.75	1.08	1.50	1.93	2.62 3.45

- 2) **Bolling flasks with Round Bottom,** with short or long welted neck. The price of flasks up to 1500 cc is 10% higher than those specified under 1), for larger flasks the prices are the same as the latter.

- 9206 5) **Conical Flasks, Erlenmeyer's Pattern.**

Approximate capacity,	50	100	200	300	450	600	850	1100	2000 cc.
Price each,	.10	.12	.15	.19	.24	.30	.35	.40	.48 cts.

- 9207. 3) **Measuring Flasks,** the gauge mark situated in the neck, without gauge mark.

Capacity,	125	250	500	1000 cc.
Price each,	.19	.30	.43	.55 cts.

## ○ 9208. 4) Kjeldahl Flasks, with flat or round bottom.

a. With short neck,

Approximate capacity,	100	200	300	500	800 cc.
Price each,	.15	.19	.24	.33	.38 cts.

b. With long neck.

Sizes same as in preceding series.

Prices 10% higher than those of the Kjeldahl flasks with short neck.

## ○ 9209. 6) Beakers, with or without spout.

Approximate capacity,	50	100	150	200	300	400	500 cc.
Height/Diameter,	$70/40$	$80/45$	$90/50$	$100/55$	$110/60$	$120/65$	$130/70$ mm.
Price each,	.13	.15	.16	.19	.24	.28	.30 cts.

Approximate capacity,	600	800	1000	1300	1500	2000 cc.
Height/Diameter,	$140/80$	$160/85$	$170/90$	$180/100$	$190/105$	$210/110$ mm.
Price each,	.33	.35	.40	.45	.48	.55 cts.

Approximate capacity,	2500	3000	4000 cc.
Height/Diameter,	$220/120$	$250/120$	$270/140$
Price each,	.68	.75	.83 cts.

## ○ 9210. 7) Beakers, low form (Griffin's tumbler form).

Approximate capacity,	50	100	150	250	400 cc.
Height/Diameter,	$50/4$	$60/50$	$75/55$	$85/65$	$100/70$ mm.
Price each,	.14	.15	.16	.19	.28

Approximate capacity,	600	800	1000	1300 cc.
Height/Diameter,	$125/80$	$135/90$	$145/100$	$160/105$ mm.
Price each,	.32	.38	.43	.50 cts.

## ○ 9211. 8a) Retorts without tubulure and stopper.

Approximate capacity,	50	100	250	500 cc.
Price each	.11	.15	.22	.35 cts.

Approximate capacity,	1	1½	2	3	4	6	8	10	15 Liter.
Price each,	.45	.53	.68	.93	1.02	1.50	2.25	3.00	4.50

## ○ 9212. 8b) Retorts with tubulure for cork but without stopper.

Approximate capacity,	50	100	250	500 cc.
Price each,	.19	.22	.33	.50

Approximate capacity,	1	1½	2	3	4	6	8	10	15 Liter.
Price each,	.65	.78	.98	1.35	1.40	1.88	2.95	3.75	5.85

Special quotations for larger retorts up to 40 litres capacity.

## ○ 9212a. 9) Flasks for Fractional Distillation.

Approximate capacity,	50	100	200	500	1000 cc.
Price each,	.23	.24	.30	.45	.68 cts.

The price of a set is the aggregate of the prices of single items.

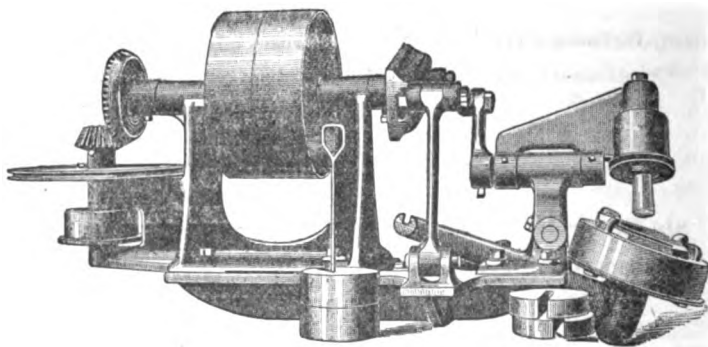
## ○ 9212b. Glass tubing, Jena, for general purposes, per pound.....60 cts.

For Jena Thermometer Tubing special Price List on application.

- 9213. **Tubes for Explosion Furnaces**, of hard fusible Jena glass, resisting in a high degree sudden changes of temperature and corrosive action of fluids. These tubes withstand high pressure; they can be brought into the blast flame without previous warming. In lengths of 1 or 2 meters, per pound.... 60 cts.
- 9214. **Combustion tubes, Jena glass** (containing but little alkali), infusible like best Bohemian tubes, free from small particles of clay. In lengths of 1 or 2 meters, per pound..... 60 cts.
- 9215. **Compound glass tubing, Jena glass**, of high resisting power against sudden changes of temperature and the action of liquids, for water gauges. As used in the German Navy and by many large users of steam power—for uncut tubes, one or two metres long, per pound..... 80 cts.

**GLASS. —Weber's Resistance Glass**, made according to the formula of Dr. R. Weber; this glass also possesses great resistance to the action of water and chemicals. Imported to Order only.

9216. **Flasks, round or flat bottom. Resistance glass.**
- |           |     |     |     |     |      |      |          |
|-----------|-----|-----|-----|-----|------|------|----------|
| Capacity, | 125 | 250 | 500 | 750 | 1000 | 1500 | 2000 CC. |
| Each,     | .10 | .15 | .25 | .30 | .35  | .40  | .60      |
9217. **Ditto, Erlenmeyer form, Resistance glass.**
- |           |     |     |     |     |      |      |          |
|-----------|-----|-----|-----|-----|------|------|----------|
| Capacity, | 125 | 250 | 500 | 750 | 1000 | 1500 | 2000 CC. |
| Each,     | .12 | .20 | .30 | .35 | .40  | .55  | .70      |
9218. **Beakers, high shape, without lip. Resistance glass.**
- |           |    |     |     |     |     |         |
|-----------|----|-----|-----|-----|-----|---------|
| Capacity, | 30 | 60  | 100 | 150 | 200 | 300 CC. |
| Each,     | .7 | .12 | .15 | .20 | .23 | .26     |
- |           |     |     |     |      |      |          |
|-----------|-----|-----|-----|------|------|----------|
| Capacity, | 400 | 600 | 750 | 1000 | 1500 | 2000 CC. |
| Each,     | .30 | .33 | .38 | .45  | .50  | .60      |
9219. **Beaker's, Griffin's, low form, with lip. Resistance glass.**
- |           |     |     |     |     |     |     |          |
|-----------|-----|-----|-----|-----|-----|-----|----------|
| Capacity, | 75  | 150 | 250 | 350 | 500 | 750 | 1000 CC. |
| Each,     | .15 | .18 | .25 | .30 | .35 | .40 | .50      |
9220. **Glass rods, with rubber tips, so called "policemen," each.....** 10 cts



9223

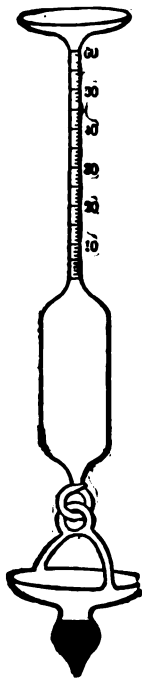
—\* 9223. **Grinding Machine, agate mortar grinder.**

Price, without mortar...\$125 00    6 in. agate mortar and pestle, extra...\$20 00

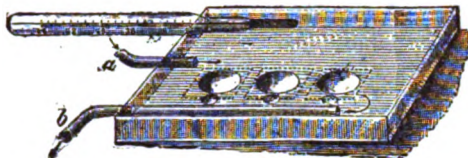
This machine was designed to do away with the laborious work of hand grinding in agate mortars. It is strongly and compactly built and has for some time been in practical use in the Bethlehem Iron Co.'s Laboratory, where experience shows that it performs its work more thoroughly than can be accomplished by hand grinding. The increased fineness of grinding has in the case of many ores made it possible to effect perfect solution without the process of fusion. The work of grinding is accomplished by revolving the mortar while the pestle is revolved more rapidly and given a motion of translation across the face of the mortar. The pressure can be controlled by weights and the mortar tilted to an inclined position to facilitate emptying. The grinding is done about ten times as rapidly as by hand.



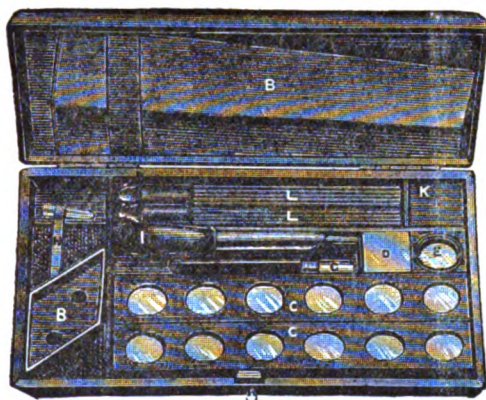
- 9224. **Hæmacytometer**, Thoma's, of Zeiss make, complete in leather case, with instructions.
- |   |            |
|---|------------|
| a. With pipette for red corpuscles.....   | \$10 00    |
| b. With pipette for white corpuscles..... | 10 92      |
| c. With both pipettes.....                | 15 14      |
| d. Pipettes separately.....               | each, 3 78 |
- 9225. **Hæmaglobinometer**, Gower's, for determining percentage of Hæmaglobin in blood, with instructions for use, in case.....\$4 60



9227



9226c



9226

- \* 9226. Lovibond's new Hæmaglobinometer set in case.  
**The Complete Hæmaglobinometer Set** (with candle light standards,) \$40 00
- |                         |      |
|-------------------------|------|
| Nine riders, extra..... | 6 00 |
|-------------------------|------|
- Separate parts:
- |  |      |
|--|------|
| Special lancet.....                      | 1 00 |
| Capillary measuring pipette.....         | 2 50 |
| Mixing pipette.....                      | 50   |
| Blood cell.....                          | 3 75 |
| Blood cell cover-glass.....              | 60   |
| Standard candles.....per 100, post free, | 60   |
- Dr. Oliver's observation instrument** recommended for hospital and surgery use, as being more convenient and accurate than the portable, collapsible form.....\$5 25
- Special binocular tintometer** (recommended where extensive work is undertaken, and indispensable when original investigation work, outside blood-color measurement is to be done.....\$15 00
- 9226a. **The complete Hæmocytometer set**, consisting of lancet, standard graded tube, 10 mm. measuring pipette, stoppered bottle for Hayem's solution, and two stoppered tubes to enable the Hayemised blood to be carried home for observation. In pocket case.....\$10 00
- 9226b. **An improved medical Percussor**.—Mr. Kingscote's improved medical percussor has been the subject of long observation and very many experiments by Mr. Kingscote and Mr. J. W. Lovibond.....\$3 75
- \* 9226c. **Heating Trough**, with 3 cavities and thermometer in 1-5° Celsius; heat can be regulated to  $\frac{1}{2}$ ° Celsius; for use with the microscope, especially for observing bacteria.....\$12 00
- Hydrometers.** We are prepared to promptly furnish special hydrometers of all kinds, either for scientific or factory use, made in our own glassblowing establishment and guarantee their accuracy. Correspondence solicited.
- \* 9227. **Hydrometer**, Failyer's, a combination of the Nichols' and Beaumé forms, especially designed for taking specific gravity of minerals.....\$ 2 50
- 9227a. **Idio**, Brix, of metal; set of three. 0°-30°, 30°-60°, 60°-90°.....15 00

## BACTERIOLOGICAL INCUBATORS.

—\* 9228. **Incubator.** These Ovens are for constant low temperature, made of copper, with conical bottom and three walls, having an air and water space all around the Oven to insure even temperature.

The inner doors are of bevelled plate glass and the outer ones of copper, double walled.

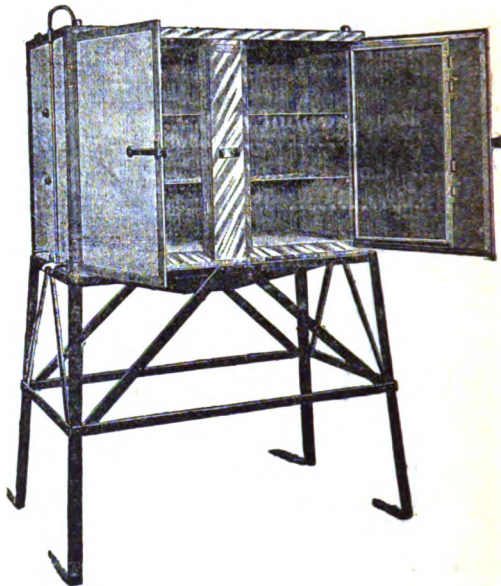
The edges on both doors are cloth-lined to make them air-tight.

The Ovens are provided with removable shelves, water gauge, drip cock and tubulations for Thermometer and Gas Regulator. The Oven is covered entirely with first-class insulating material, mounted on iron stand, japanned black.

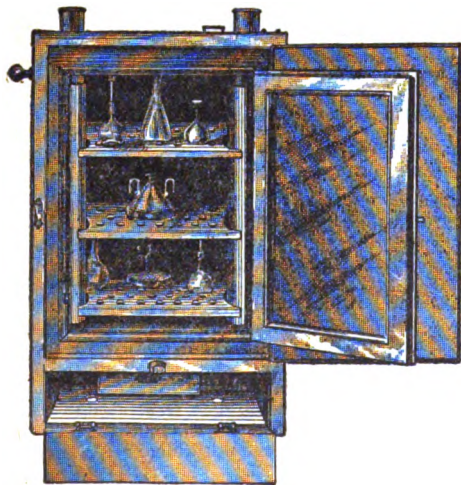
They are made in the following sizes :

18 ins. high, 30 ins. wide, 14 ins. deep.....	\$125.00
25 ins. high, 30 ins. wide, 18 ins. deep.....	\$170.00
20 ins. high, 84 ins. wide, 15 ins. deep.....	\$300.00
18x18x12 in.....	\$80.00

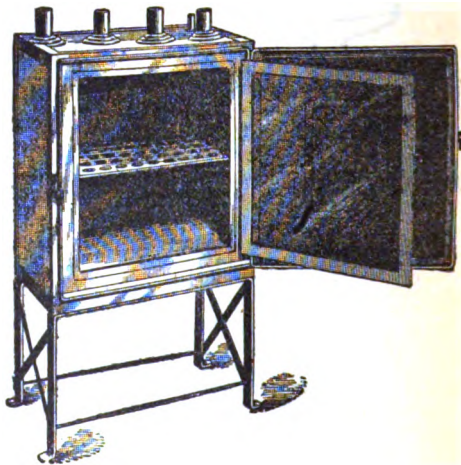
Inside Measurements.



9228



9229



9229a

○—\* 9229. **Incubator**, made of wood, with reservoir of galvanized iron, which is heated by a microburner, and connected with a series of stand pipes covering sides and back of Incubator. The heat is equally distributed by strips of conductive metal, suspended within these pipes.

Size 75 cm. high, 55 cm. wide, 55 cm. deep inside, for experimental work, private laboratory or physician's use.

Price complete, with Microburner, Gas Regulator and Thermometer.....\$25.00

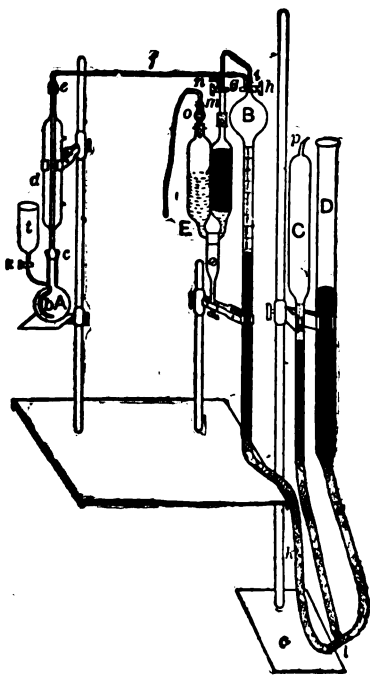
○\* 9229a. **Incubator**, for smaller laboratories, made entirely of copper and coated with asbestos outside; double walls and close-fitting double doors, only one of which is of glass; complete on stand.

	Height.	Breadth.	Depth.	Price.
Small. Inside dimension.....	10 in.	8 in.	8 in.	\$25 00
Large. " " .....	12 in.	10 in.	10 in.	30 00

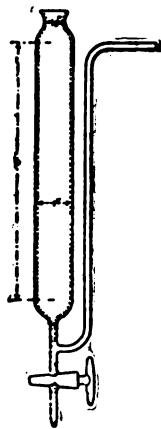
## IRON ANALYSIS.

**We make a specialty of Iron Laboratory supplies, both Chemicals and Apparatus, and carrying the largest stock of this line of goods in the country enables us to fill orders promptly. We carry a full line of the Apparatus described in Blair's "Chemical Analysis of Iron," and other standard works on the subject.**

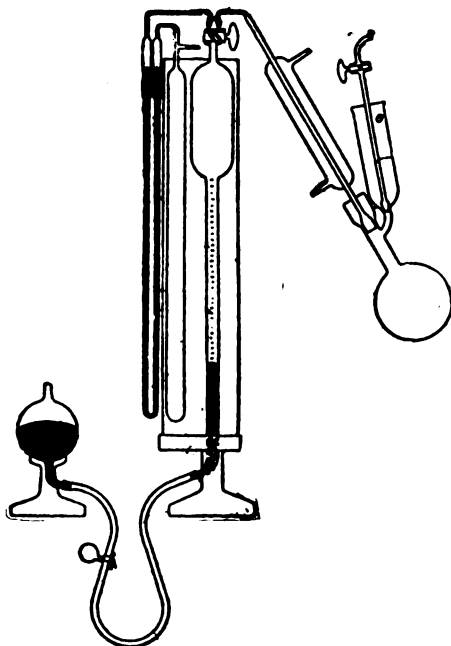
- \* 9230. Absorption tube, Camp's.....\$2 50  
 Agate Mortar Grinder. See 9223.
- \* 9231. Apparatus, for determining Carbon in Iron, Lunge's.  
 Complete with supports.....\$25 00. Glass parts.....\$20 00



9231



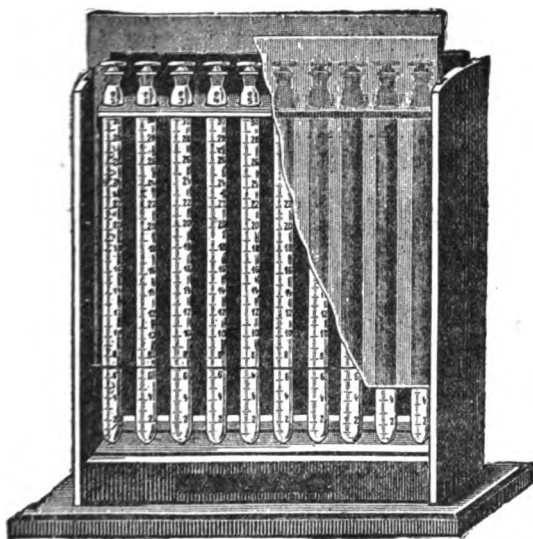
9230



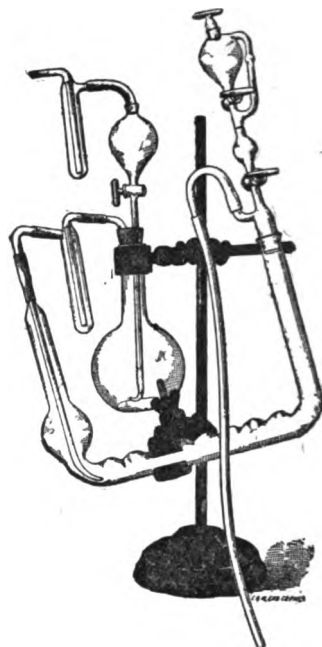
9232

- \* 9232. Ditto, ditto, ditto, latest modification, complete as per cut.....\$20 00
9233. Ditto, ditto, ditto, Wiborgh's, modified by Thoerner, without support... 15 00
- \* 9234. Ditto, ditto, ditto, Ukens's, for the Colorimetric method. Complete with 10 glass stoppered Eggertz' tubes in frame.....\$30 00
- 9235. Ditto, ditto, ditto, Lovibund's Tintometer, set for estimating carbon in steel and percentage of ammonia in Nessler Ammonia Test, including the improved optical instrument, box with standard reflector, 1 inch glass cell, and 30 standard glasses.....\$57 50

**This is by far the best Color Comparator for use with the Eggertz method, having a reliable permanent Color Standard, thereby avoiding the necessity of making fresh standard solutions and doing away with the certain errors which arise from the fading of standard solutions when not promptly used after making; this loss of color being equal to 0.1% of carbon per hour.**

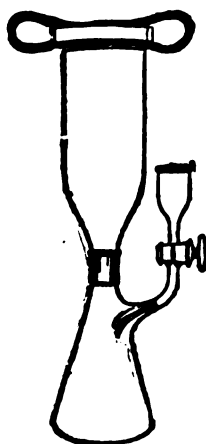


9234

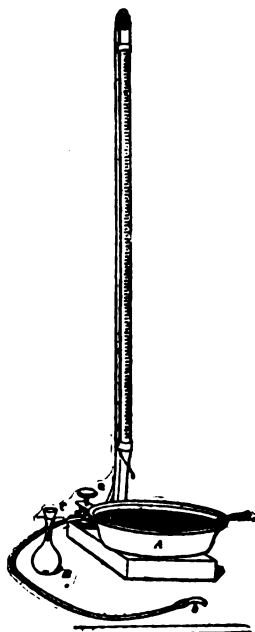


9236

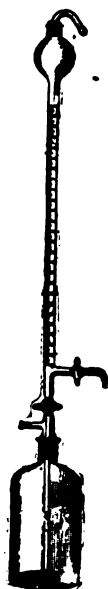
- \* 9236. Apparatus, for determination of sulphur in iron, by bromine; Dudley's, complete, glass parts..... \$10 00



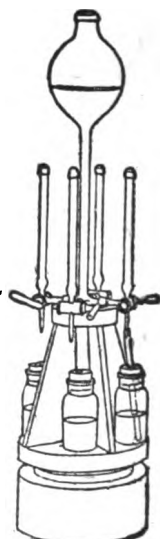
9237



9238



9239



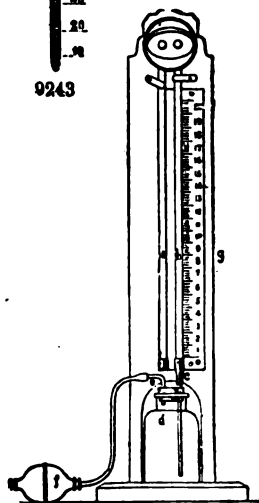
9240

- \* 9237. Ditto, Wiborgh's, for the exact colorimetric determination of S in Fe.  
 a, Glass parts with ring and clamp ..... \$5 00  
 b, Normal color scale with percentage table..... 6 00  
 c, Prepared linens, ready for use, per 100..... 3 00

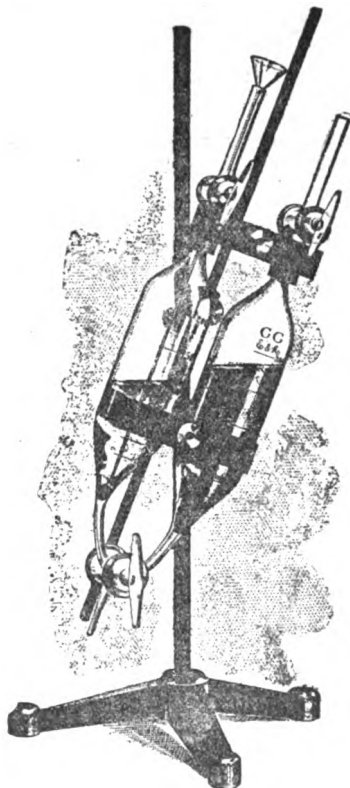
- \* 9238. **Burette**, capable of delivering minute drops; with support and rubber tube (Blair's Anal. of Iron, p. 208).....\$6 00
- \* 9239. Ditto, Uehling's, (Blair's Anal. of Iron, p. 208)..... 6 00
- \* 9240. **Burette Apparatus**, consisting of 4 burettes, reservoir, etc., on stand, for rapid delivery of known volumes (Blair Anal. of Iron, p. 164).....\$20 00
9241. **Burette and Reservoir**, Jones', for volumetric determinations with potassium permanganate, etc. Burette with double stopcock, feed tube and reservoir, of  $\frac{1}{2}$  gal. capacity, mounted on sliding board, with extra scale on milk glass and large metal clamps.....\$19 00



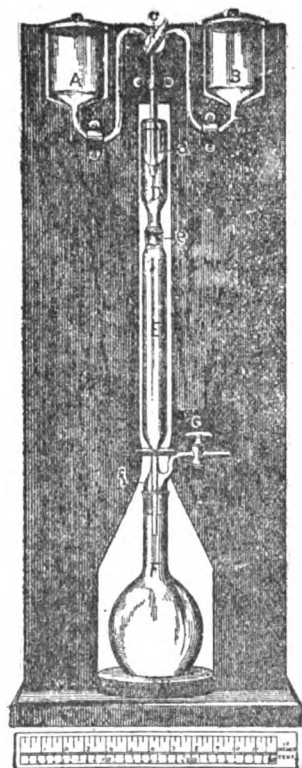
9243



9242

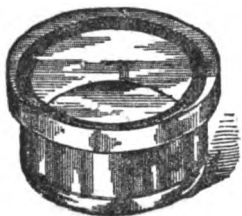


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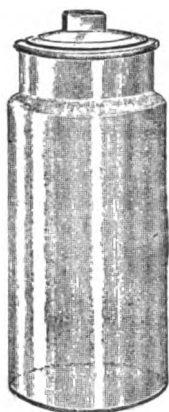


9245

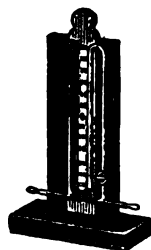
- \* 9242. **Chromometer**, Stead's, with graduated scale, on support..... 10 00
- \* 9243. **Phosphorus tube**, Goetz's, for determination of P by measuring the precipitate. Plain.....\$1 25. Stopped.....\$1 75
- \* 9244. **Pipette**, Rothe's, for rapid estimation of iron, as perchloride, by means of ether.....\$12 00 Support, extra.....\$3 00
- \* 9245. **Reductor**, Jones', for the reduction of iron solutions by filtration through zinc. Original form with ground glass joints.....\$18 00
9246. Ditto, ditto, simplified form, complete, on stand..... 9 00



9247



9247a



9249



9250

9246a. Jars, rectangular, of clearest mirror glass, luted by a burnt-in enamel which resists heat, acids and alkalis. All sizes imported to order. Prices on application.

\* 9247. Jars, for microscopic work, of clearest glass, with accurately ground cover, alcohol tight; so-called **Stender dish**. Best German make and entirely superior to the domestic article.

	4	6	8	10	13	16 ctm. diam.
Low shape,	.25	.30	.40	.50	.85	\$1 00 each.
High shape,		.30	.40	.50 each.		

\*○ 9247a. Ditto, made of clearest flint glass, with mouths nearly as wide as the jars themselves, and glass stoppers carefully ground in.

Diameter of Body.	Height to Shoulder.	Height to top of Stopper.	Width of Mouth.	Capacity to Neck.	Price per Dozen.
1½ in.	2 in.	3½ in.	1½ in.	1½ oz.	\$ 1 90
1½ in.	3 in.	4½ in.	1½ in.	2½ oz.	1 95
2 in.	2½ in.	4½ in.	1½ in.	3 oz.	2 10
2 in.	3½ in.	5½ in.	1½ in.	5 oz.	2 25
2 in.	5 in.	6½ in.	1½ in.	8 oz.	2 65
2½ in.	3½ in.	5½ in.	2 in.	8 oz.	2 80
2½ in.	5 in.	7 in.	2 in.	11 oz.	3 00
2½ in.	7 in.	9 in.	2 in.	16 oz.	3 40
3 in.	4 in.	6½ in.	2 in.	14 oz.	3 60
3 in.	6 in.	8½ in.	2 in.	20 oz.	3 95
3 in.	8 in.	10 in.	2 in.	28 oz.	4 70
3½ in.	6 in.	8½ in.	3 in.	29 oz.	5 05
3½ in.	8 in.	10½ in.	3 in.	40 oz.	6 40
3½ in.	10 in.	12½ in.	3 in.	52 oz.	7 90
4 in.	5 in.	7½ in.	3½ in.	38 oz.	6 55
4 in.	8 in.	10½ in.	3½ in.	62 oz.	8 10
4 in.	12 in.	14½ in.	3½ in.	92 oz.	9 75
6 in.	7 in.	10 in.	5 in.	98 oz.	11 60
6 in.	10 in.	13 in.	5 in.	140 oz.	15 00
6 in.	12 in.	15 in.	5 in.	168 oz.	18 00
6 in.	15 in.	18 in.	5 in.	212 oz.	20 25

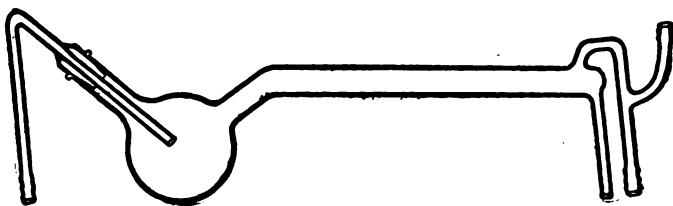
Special sizes made to Order in Quantities. In ordering, give Diameter of Body and Height to Shoulder.

9248. Lamp, Lindemann's, for Zircon lamp. See No. 9060.

Lecture Apparatus, as described in Heumann's "Anleitung zum Experimentiren," promptly furnished. Prices on application.



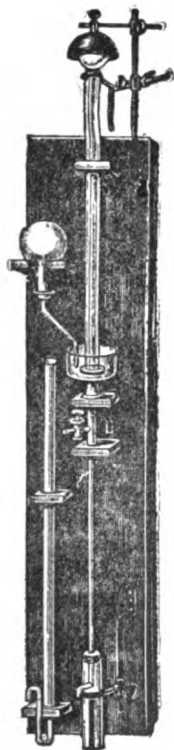
- \* 9249. **Manometer**, with glass stopcock and movable scale, filled with mercury, mounted on support..... \$6 00  
 Ditto, with scale engraved on glass, each.....\$7 00
- \* 9250. **Melting Point determination Apparatus**, Roth's.....\$2 50



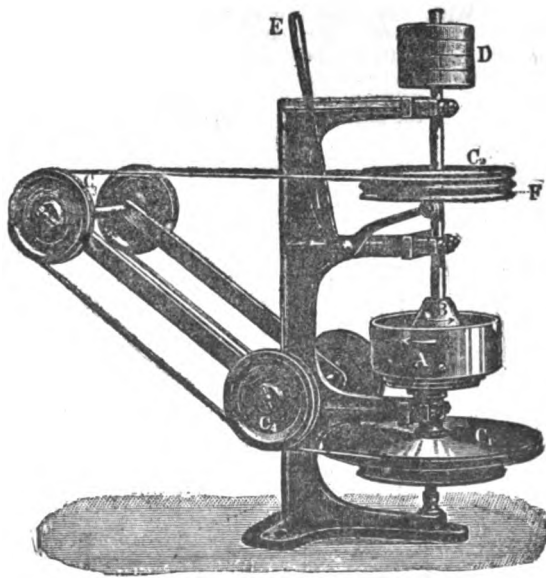
9252

- \* 9251. **Mercury distilling apparatus**, Karsten's, for purifying mercury—complete on stand.....\$18 00      Glass parts.....\$11 00
- \* 9252. Ditto, ditto, of simple construction, can be mounted on any convenient support and heated by an ordinary Bunsen burner; glass parts.....\$5 50

See also No. 9170.



9251



9253

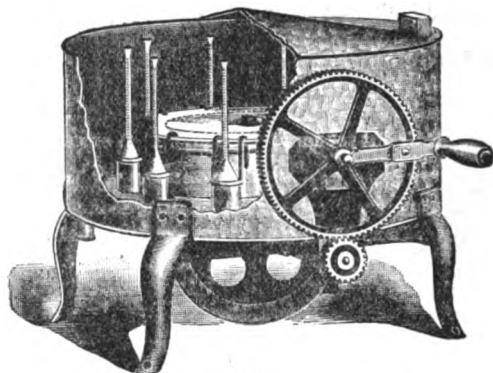
- \* 9253. **Mill**, Merker's, for grinding fodders, etc., as used abroad and at the Connecticut and other Agricultural Experiment Stations; the most efficient for reducing coarsely powdered fodders to a fine state.

For hand use.....\$114 00      For power.....\$90 00

9253a **Mill**, all porcelain for grinding c. p. chemicals, small, \$6 00; medium, \$15 00; large.....\$25 00

○ 9253b. **Porcelain balls** for same.....pound, 25 cts.

## MILK TESTING APPARATUS.



9254

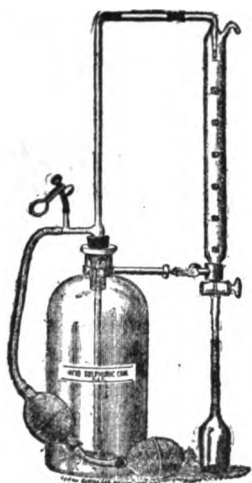
○\* 954. **Babcock's Milk Tester.** This well-known apparatus gives the exact butter value of milk within ten minutes. Full directions for using are sent with each machine. With 40 turns of the crank the bottle-head reaches a speed of 1,680 revolutions per minute, and 60 turns of the crank gives 1,620 revolutions of the bottle-head per minute.

This very important qualification of ease in obtaining the required speed without too great a speed of the crank, together with the good workmanship and the convenience of the apparatus, combine to make our Babcock Tester the very best hand-operated machine on the market.

4-bottle Tester, swinging pockets, with outfit.....	\$ 8 00
6        "                  "                  " .....	9 00
8        "                  "                  " .....	10 00
10      "                  "                  " .....	12 00
12      "                  "                  " .....	14 00
16      "                  "                  " .....	18 00
20      "                  "                  " .....	20 00



- |          |  |        |
|----------|--|--------|
| —* 9257. | Test Bottles, Babcock's, for cream, 35%, per doz.....                                | 7 00   |
| —* 9258. | “ “ “ Conn. Agricult. Expt. Station pattern,<br>30%, per doz.....                    | \$4 80 |
| .        | The latter are recommended as fitting all makes of machines and being easy to clean. |        |
| —* 9259. | Ditto, ditto, for skim and buttermilk, doz.....                                      | \$4 00 |
| 9260.    | Milk Pipettes, 17.6 CC., per doz.....  | \$3 00 |
| 9261.    | Ditto, and Cream Pipettes, 17.6 and 18 CC., per doz.....                             | 3 60   |
| — 9262.  | Acid measures, on foot, 17.6 CC., per doz.....                                       | 2 00   |
| 9263.    | Test Bottle Brushes, small, doz..... 36 cts. Large, doz.....                         | 1 00   |



9264

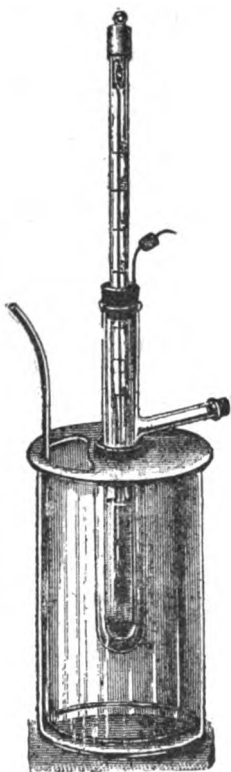


9266

- \* 9264. Burette, automatic, for delivering six charges (17.6 CC.) sulphuric acid before refilling, complete with reservoir..... \$5 00
- 9265. Burette, with stopcock, style 5788b, for acid.  
For        3            6            12            25 charges of acid. (17.6 CC. each.)  
             \$2 00       2 50       3 00       4 50 each.
- \* 9266. Pipette, automatic, 17.6 CC., complete with reservoir and rubber bulb, for acid. ....\$6 00  
All graduated Milk Apparatus quoted above is made in our own shop and of guaranteed accuracy. Much of the cheap ware on the market is so inaccurate as to be unfit for use.
- 9267. Milk Apparatus, Dr. T. F. Holt's, for testing human milk; consisting of 2 graduated stoppered cylinders, 1 lactometer and cylinder for same; complete in box, with instructions for use.....\$3 00

**Molecular weight determination Apparatus, according to Beckman.**

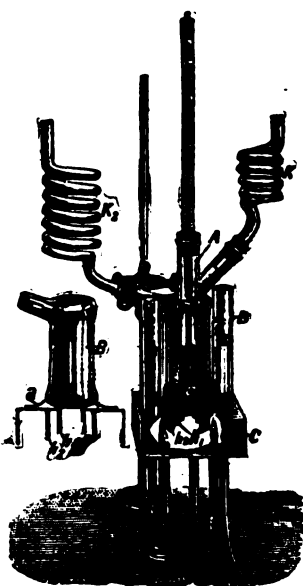
- \* 9268. **Apparatus, for the Freezing Method, including Standard Thermometer of Jena Normal Glass in 1/100° C., Cylindrical Glass Jar with nickel cover. Zinc Support, Stirrer, 2 Air Jackets, 2 Freezing Tubes, 4 Pipettes, etc. \$32 50**



9268

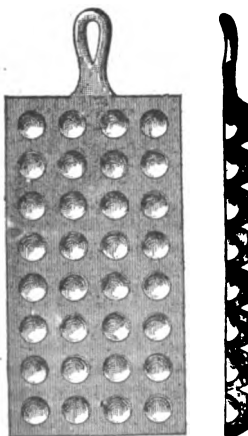


9269

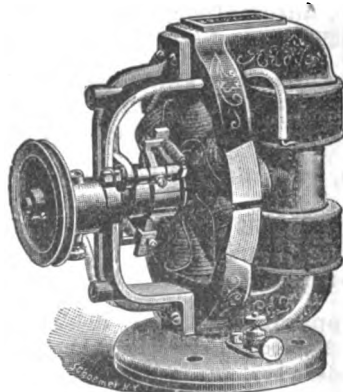


9270

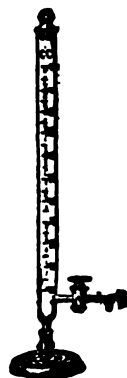
- \* 9269. Ditto, for the Boiling Point Method, original form, consisting of Standard Thermometer in  $1/100^{\circ}$  C., of Jena Normal Glass, Boiling Flask with sealed-in platinum wire, Asbestos Jacket, Pasteboard, Granates, Glass Beads, Pastille Press, Pipette Valve Trough, Metallic Globe Condenser, Glass Condenser and Gas Regulating Stopcock.....\$42 00



9271a



9273

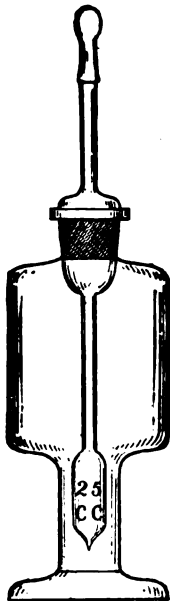


9275

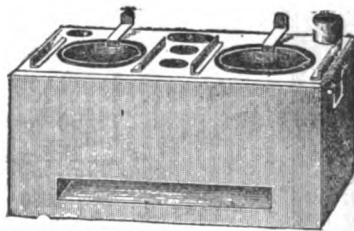
- \* 9270. Ditto, ditto, latest form, consisting of Standard Thermometer in  $1/100^{\circ}$  C., of Jena Normal Glass, Asbestos Case, Steam Jacket of glass, ditto, of porcelain, Test Tube with sealed-in platinum, Spiral Condensers, 2 small Liebig Condensers, Granates, heavy Glass Beads, Pipette, Clay Plate and Asbestos Paper .....\$37 50

Prices quoted above are in each case for the apparatus made under Prof. Beckmann's supervision and the thermometers are of the greatest accuracy.

- 9271. Models of Metallurgical Furnaces**, as used in the manufacture of iron, steel and other metals, imported free of duty for institutions; prices on application. These models are most carefully constructed, showing every detail of the full-sized furnaces in actual use, and in exact proportions.
- \* **9271a. Mould, for pouring**, new pattern, with 32 cavities.....\$5 00
- 9272. Motor, hot air**, operated by a Bunsen burner, for stirring and shaking apparatus. Imported to order. Price, according to size, from \$20 00 upwards.
- \* **9273. Motor, Electric**, for stirring machines and other purposes where only small power is required.....net, \$15 00  
This motor is most economically operated by a battery of 6 or 8 Edison-Lalande cells, which require very little attention and are renewed at slight cost.
- **9274. Muffles, of Denver fire clay**. The most durable made.
- |   |  |        |
|---|--|--------|
| C | 4½ in. × 8 in. × 3 in., (Hoskins small) in dozen lots, each..... | \$ .60 |
| F | 6 in. × 10 in. × 4 in. " large.....                              | .75    |
| H | 5½ in. × 10½ in. × 3½ in., Mint.....                             | .75    |
| J | 6 in. × 12 in. × 4 in., Mint.....                                | .90    |
| K | 8 in. × 14 in. × 5½ in., high sides.....                         | 1 25   |
| L | 9 in. × 15 in. × 5½ in., ".....                                  | 1 50   |
| M | 14 in. × 18 in. × 7 in., ".....                                  | 2 75   |
- Less than one dozen, 20% higher. Special sizes to order.
- \* **9275. Muter tube**, graduated to 250 CC., with stopper and stopcock, mounted in wooden base.....\$3 00
- **9275a. Ditto**, ditto, with stopcock at bottom.....\$4 50
- **9276. Ozone Apparatus, Ehli's**, for the administration of nascent ozone in certain forms of disease; complete with induction coil and accessories.
- |            |         |            |         |
|------------|---------|------------|---------|
| Small..... | \$50 00 | Large..... | \$62 50 |
|------------|---------|------------|---------|
- 9276a. Ditto, Tubes, of glass, Siemens'**, unmounted.
- |            |        |            |        |
|------------|--------|------------|--------|
| Small..... | \$1 25 | Large..... | \$1 50 |
|------------|--------|------------|--------|



9278



9277

- \* **9277. Paraffine Bath**, for microscopic work, of polished copper, tin lined, with nickel-plated cups; size 3½ × 7 in.....\$6 75  
With support, extra.....75 cts.

**Physical Apparatus.**—See our special catalogue of Max Kohl's goods, for which we are sole U. S. Agents.

- \* 9278. **Pipette Bottle**, with a capped pipette ground into neck in place of stopper, very practical, especially for volatile liquids.

With	10	25	50	100 CC. pipette.
Each,	\$2 00	2 50	3 00	3 50

The shape of the bottle is such that the last drop of liquid can be taken up by the pipette.



9279

- \* 9279. **Pipette, safety**, very useful for acids and poisonous liquids.

Capacity,	2 to 5 CC.	10 to 25 CC.	50 CC.	100 CC.
Each,	\$2 00	2 50	2 75	3 25

9280. **Ditto**, for micro-chemical filtration, see Filter Pipette, 9136.

9281. **Ditto, automatic** (see cut No. 9266), complete with Reservoir, Rubber Pressure Bulb, and pipette of any size up to 50 CC. .... \$3 00



9283



9285



9284

- \* 9283. **Ditto, Grethan's**, for weighing fuming acids, etc. .... 2 50

- \* 9284. **Ditto, Lunge's**, " " " .... 4 00

- \* 9285. **Ditto, Schweitzer's**, " " light and heavy liquids.  
10 CC. .... 30 cts. 25 CC. .... 40 cts. 50 CC. .... 50 cts.

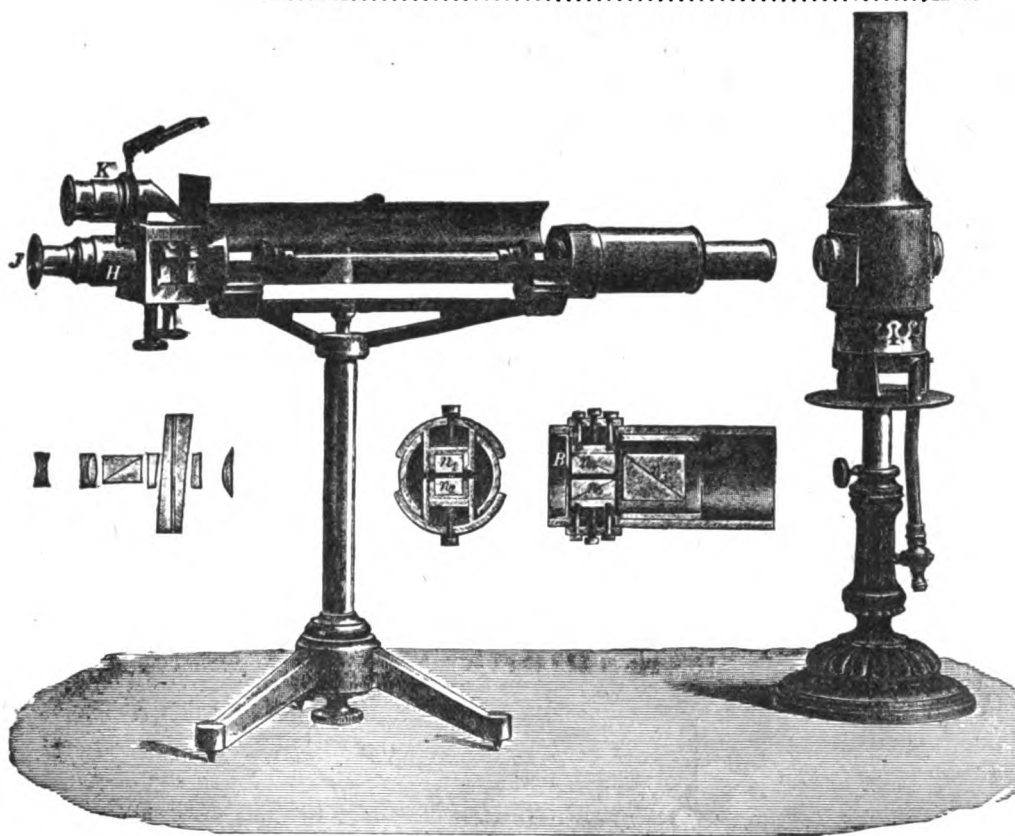
**Plant Physiology Apparatus**, according to Dettmer & Pfeffer. Prices on application.

## POLARISCOPES.

We call attention to the new Polariscopes described below, made by the well-known firm of Schmidt & Haensch, Berlin, for whom we are sole U. S. Agents.

All Polariscopes of this make are now supplied, at an extra cost of \$5.00, with a **New Inclinable Mirror Attachment**, which reflects light from the Polariscopes Lamp directly on the Percentage Scale, making it much easier to read, and at the same time doing away with a second lamp for this purpose, so trying to the eyes of the observer.

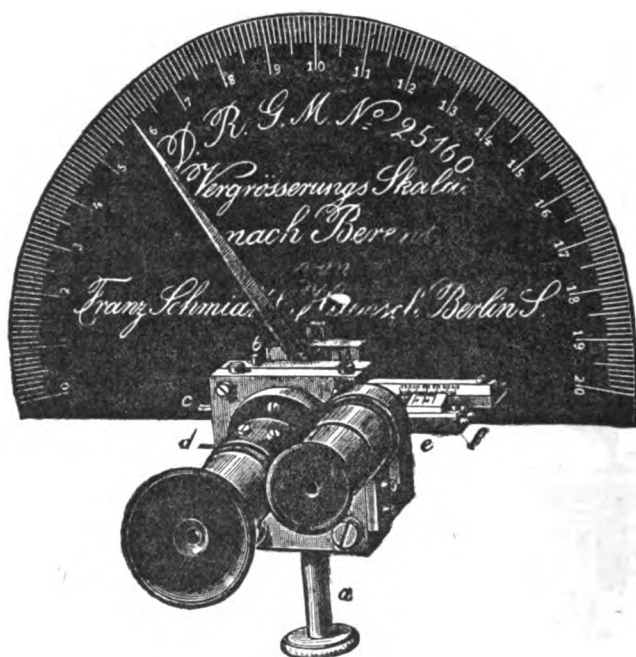
- The new **Triple field of Vision** will also be furnished, in place of the ordinary, on any of the newer form Polariscopes made by Schmidt & Haensch, at an extra cost of.....\$42 00



9286

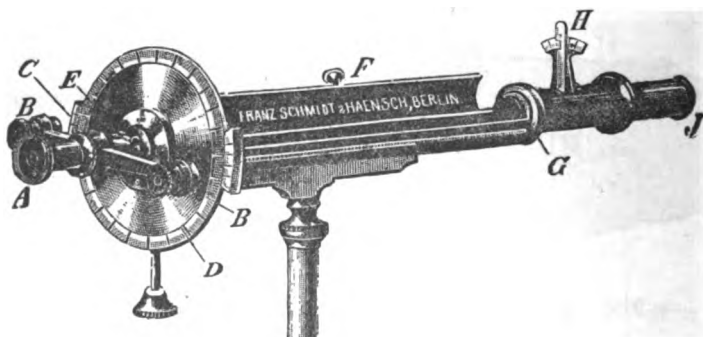
- \* 9286. **Polariscope, Schmidt & Haensch's New Half Shade Instrument with Triple Field of Vision and New Reading Attachment**, with 200 m. m. and 100 m. m. tubes.....\$217 00
- 9287. Ditto, ditto, with double quartz compensation, with 200 and 100 m. m. tubes.....\$310 75
- 9287a. Ditto, ditto, ditto, with 400, 200 and 100 m. m. tubes..... 336 00

These new Polariscopes far surpass the older instruments in sensitiveness, and on this account errors in reading are almost impossible. They have received the unanimous approval of prominent sugar chemists abroad and such an authority as Prof. Landolt especially, is of the opinion that they will supersede all other Polariscopes, on account of their extreme sensitiveness. The field consists of 3 parts, the two outer segments of which have equal illumination. Set at zero, all three segments are equal in appearance, but in any other position, the centre one is shaded, while the two outer segments always remain equally illuminated. (See Figure 2, page 7).



9288

- \* 9288. **Polariscope, Schmidt & Haensch's New Instrument for Beet Sugar, with enlarged circular scale, which can be read to 1-10° at several paces distance;** works perfectly and permits the readings of the operator to be taken at a glance by a second person. Additional cost for this scale when furnished with any of the regular instruments .....\$37 50



9289

- \* 9289. **Polariscope, Half Shade, Lauren't Model, with absorption vessel, Lippich's Polarizer with double field, complete with 220 m. m. 250 m. m. and 100 m. m. observation tubes, and sodium gas lamp in case** ..... \$165 50
- 9289a. The same instrument with double scale for reading direct percentage of cane and beet sugar. This instrument has much lighter field than the original French. .... \$186 50
- The same instrument for 400 m. m. tube.....\$207 50
- 9290. **Polariscope, New, for Urine Analysis; for the rapid and exact estimation of sugar and albumen in urine, reading to 1-10 of 1%, using common white light; complete with 3 observation tubes** .....\$100 00

9291. Polariscopes, Landolt-Lippich, imported to order. Prices for any of the three forms on application.

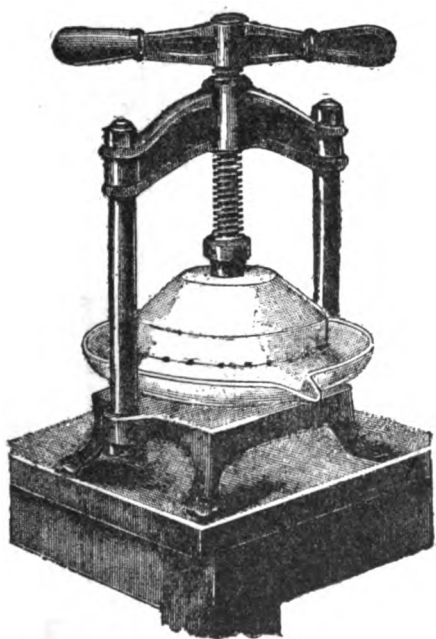
9292. Polariscopes Observation Tubes, Landolt's, new form, with sliding caps which are instantly adjusted, saving considerable time, as compared with the screw caps.

	180	200	400 m. m.
— Glass tube,	\$3 50	3 50	4 00
Metal “	5 00	5 00	5 50

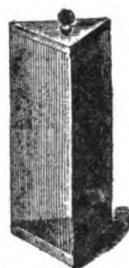
— 9293. Ditto, ditto, ditto, Pellet's, for continuous flow, 200 m. m. tube.....\$8 25  
400 m. m. tube..... 8 75

○ 9294. Ditto, Gas Lamp, Landolt's, light transmitted through a glass rod, similar to No. 8773. Small.....\$10 00 Large.....\$12 00

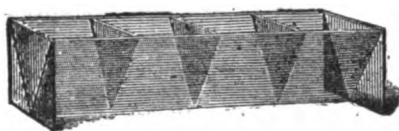
9295. Ditto, Lamp Chimney of Porcelain, with Bull's Eye Condenser.....\$7 00



9300



9301



9302



9303

— \* 9300. Press, Dr. Witte's; a Column Press of solid build, and provided with porcelain plates, 18 ctm. diameter; specially constructed to resist great pressure; very useful for compressing substances containing acids or alkalis, which attack metal plates.....\$45 00

**Prisms of Clearest Mirror Glass, luting burnt in to resist heat, acid and alkalis.**

\* 9301. Prism, High Shape, m. m., 75 high x 35 wide, 90 high x 60 wide, 105 high x 105 wide,  
Each, \$5 60 8 40 12 50

\* 9302. Prism, Trough Shape, each partition 50 m. m. long x 55 m. m. side, without cover.  
With 1 2 3 4 compartments,  
Each, \$5 00 10 50 14 00 17 50

\* 9303. Ditto, Prismatic,  
m. m., 100 long x 40 high, 140 long x 45 high, 180 long x 50 high.  
Per pair, \$8 40 12 50 16 80

## PYROMETERS.

- 9304. **Pyrometer Cones, Seeger's, for use in the ceramic industry; set of 25 numbered cones, ranging from 1150° to 2000° Celsius.....\$1 20**
9305. **Ditto, Metal, so called Princep's Alloys, of various melting points, from 620° to 1775° Celsius. Prices on application.**
- 9306. **Ditto, Electric, in iron tube with pure nickel mountings, lower end terminating in an iron bulb fitted inside with platinum; for temperatures up to 1000° Cel.**  
 Price without platinum.....\$85 00  
 Platinum, weighing about 75 grammes, extra at market price.
- 9306a. **Ditto, same as above, but lower end terminating in a platinum bulb, for temperatures up to 1200° Cel.....\$85 00**  
 Platinum, weighing about 200 grammes, extra at market price.

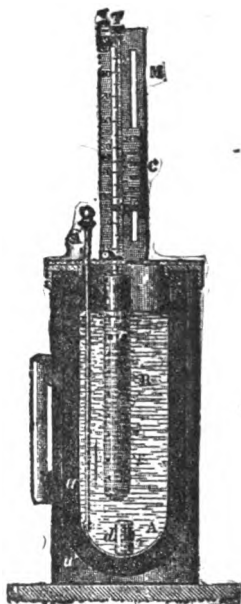


9307

- \* 9307. **Ditto, telescope form, Mesure & Noel's so-called "Lunette pyrométrique" for quickly determining the temperature of incandescent substances by direct observation. Very useful for Iron, Gas, Glass and Pottery works and all industries having furnaces and incandescent substances to be brought up to and kept at a certain temperature. Every instrument made under the superintendence of and guaranteed by the inventors.**

Price, complete in leather case, with shoulder strap, and instructions for use.....\$55 50

With large objective in separate case.....\$75 00

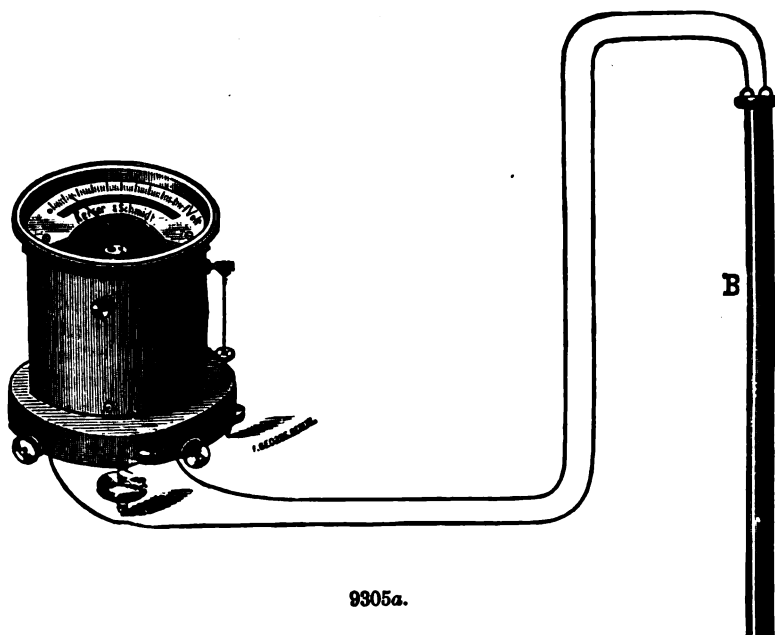


9308

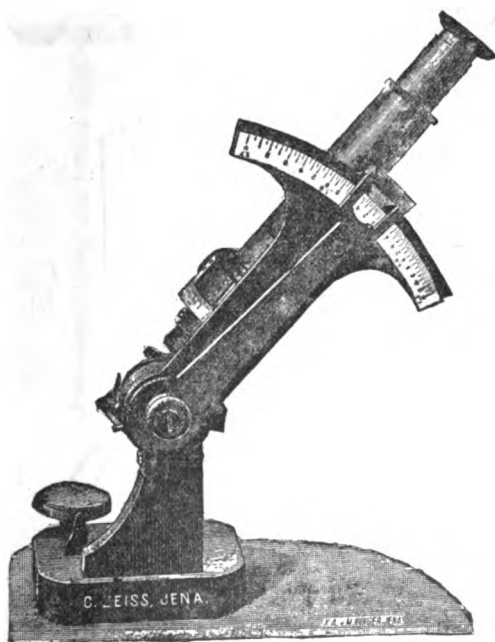
- 9307a. **Ditto, thermo-electric, Le Chatelier's, for high temperatures; body of iron, 110 ctm. long, through which platinum and platinum rhodium wires run its entire length, constituting the "Couple Le Chatelier"..... \$35 00**
- 9307b. **Ditto, ditto, ditto, but with body of porcelain, with enameled inside tube, 20 m.m. outside diameter, x 57 ctm. long..... \$35 00**
- 9307c. **Registering Galvanometer for use with Le Chatelier Pyrometer.....\$171 00**
- \* 9308. **Ditto, Siemens' Water Pyrometer, with thermometer and six copper cylinders, for temperatures up to 1800° Fahr..... \$30 00**



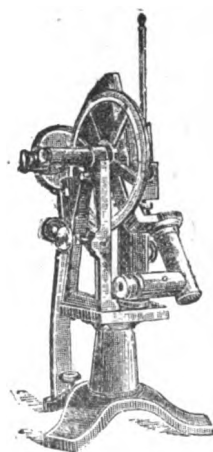
○\* 9205a. New Platin-Rhodium Pyrometer.....\$150 00



9205a.

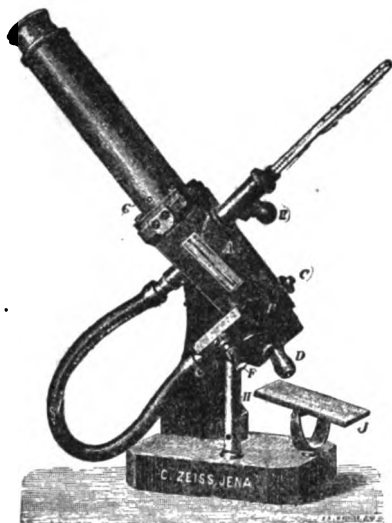


9310



9312

- \* 9310. **Refractometer, Abbe's**, for quickly determining refractive and dispersive powers, principally of liquids. A single drop of any fluid is sufficient, and the reading gives actual result, no calculation being necessary. In case with directions.....\$104 00
- With heating arrangement..... 120 00
- Thermometer for same 0-75° C in 1/1..... 1 10



9311

- \* 9311. Ditto. Butyro, for the Analysis of butter (distinguishing between oleomargarine and butter also for the refractometric examination of fats and oils. In case with directions.....\$68 00

○  
○  
○  
○

Heating arrangement for same. 24 00

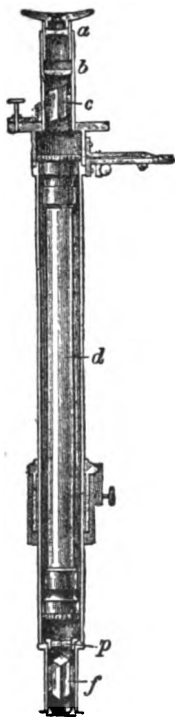
Thermometer 0-50° C. in 1/2°.. 1 10

Special—for lard..... 2 25

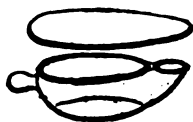
Water pressure regulator..... 3 60

- \* 9312. Ditto, Chemical, Pulfrich's, for determining refractive index of liquids, with condensing lense and magnifiers. Refraction of Prism, 1.61.....\$85 00

9313. Respirator, for use in a poisonous atmosphere.. \$3 00



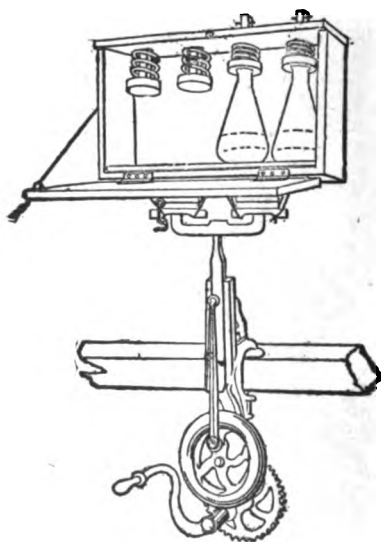
9314



9315



9319



9320

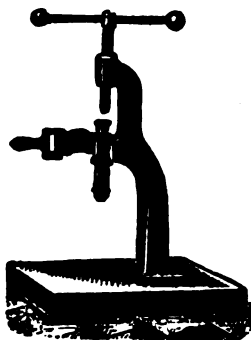
- \* 9314. Saccharometer, Ultzman's, for determining Glucose in Urine; an optical instrument, easily manipulated and reading direct percentage of glucose; complete in case.....\$33 00 Support, extra.....\$4 75

- \* 9315. Scoop, of glass, Prausnitz's, for weighing solids or liquids.
- |                            |     |     |                  |
|----------------------------|-----|-----|------------------|
|                            | 10  | 20  | 30 CC. capacity. |
|                            | .30 | .35 | .40 each.        |
| With glass cover ground on | .50 | .55 | .60 "            |

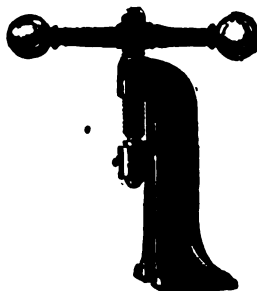
- 9316. Scorifiers, of Denver fire clay. The best on the market.
- | Diameter,       | 2½ in. | 2¾ in. | 3 in. | 4 in. |
|-----------------|--------|--------|-------|-------|
| Price, per 100, | \$1 20 | 1 30   | 2 00  | 3 00  |
- Less than small original barrel, 20% higher.
- \* 9317. Section Lifter, brass, nickel-plated, blade ¼ in. wide.....15 cts.
- \* 9318. Separating Apparatus, Penfield's, for separating minerals of high specific gravity, by means of the double nitrate of thallium and silver, which is liquid at 100° Cels., and has a specific gravity of nearly 5.0.....\$3 50
- Rack to hold 3 of the apparatus, extra.....1 00
- \* 9319. Ditto, ditto, Schuetze's .....2 50
- \* 9320. Shaking Apparatus, Dudley's, complete.....15 00



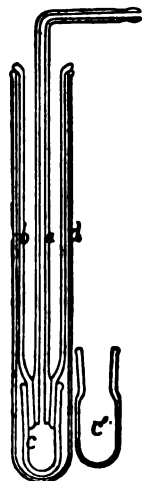
9317



9321

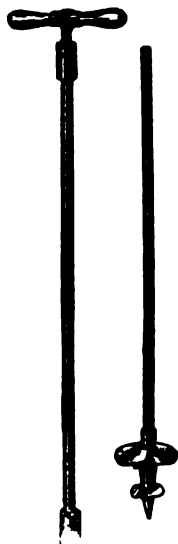


9321a

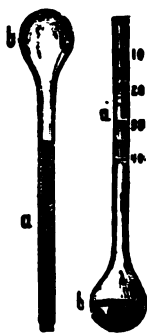


9318

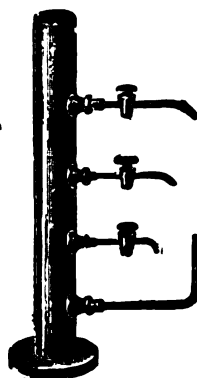
- \* 9321. Sodium Press, with moulds for ¼, 1 and 2 mm. wire.....\$18 50
- \* 9321a. Sodium Press, larger and stronger with 1 cylinder diameter for ¼ mm. wire.....\$40 00



9322



9325



9326



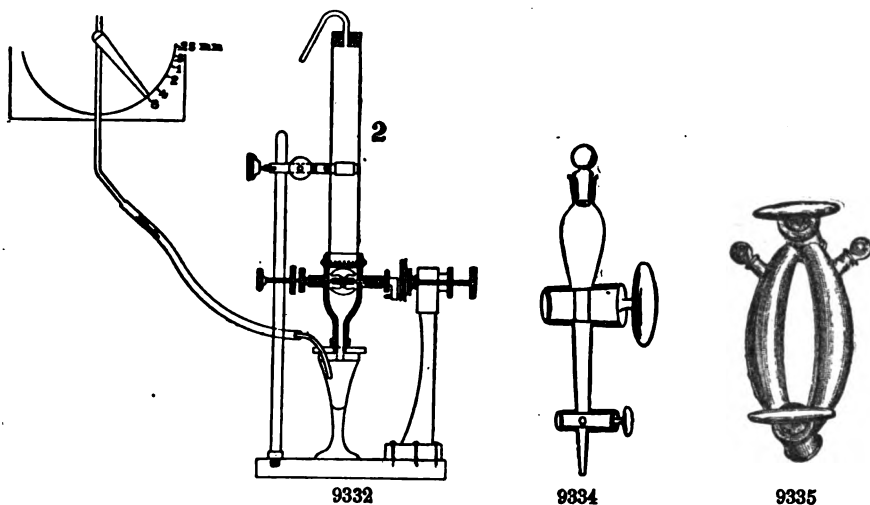
9323

## SOIL ANALYSIS.

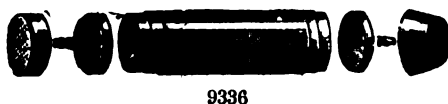
- \* 9322. Borer, for soils, 2 metres long.
- | Diameter, | 50     | 80   | 105  | 130  | 160 m.m. |
|-----------|--------|------|------|------|----------|
| Each,     | \$6.00 | 7.00 | 7.50 | 8.50 | 10.00    |
- \* 9323. Ditto, Frankel's .....\$18 00
9324. Sieves, set of 3, 4 in. diameter, with circular perforations of ¼, 1 and 2 m.m. diameter, in brass frames with box and cover also of brass.....\$5 00
- 9324a. Sieve Cylinder, Hilgard's, for determining the water capacity of soils; see Bulletin No. 38, U. S. Dept. of Agriculture .....\$1 50
- \* 9325. Elutriating Flask, graduated, Benningsen's.....\$1 50
- \* 9326. Ditto. Apparatus, Knopf's, 20 in. high x 3¼ in. diam., complete with 3 stop-cocks.....\$12 00
- The cylinder only .....\$6 00



- |         |   |         |
|---------|---|---------|
| * 9330. | Elutriating Apparatus, Schoene's, complete with metal reservoir for water, and support table..... | \$35 00 |
| * 9331. | Ditto, ditto, ditto, another style, complete with support.....                                    | \$17 50 |



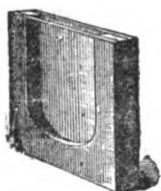
- |         |  |         |
|---------|--|---------|
| * 9332. | Ditto, ditto, Hilgard's, with stirring arrangement; of finest construction, metal parts nickel plated..... | \$25 00 |
| * 9334. | Separator, Brogger-Harada's; large, bore of upper stopcock, 15 mm...                                       | 12 00   |
|         | Small, " " " " 10 mm...  | 10 00   |
| * 9335. | Ditto, Wulff's.....  | 6 50    |



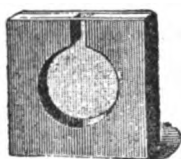
- |         |  |       |       |       |           |     |        |        |
|---------|--|-------|-------|-------|-----------|-----|--------|--------|
| * 4336. | Cylinder, of metal, Flügge's, for determining the volume of pores in soil..\$7 50  |       |       |       |           |     |        |        |
| * 4337. | Thermometer, mounted in metal case with borer, grad. 0-60° C. in 1/10°, for taking temperature of soils at different depths. |       |       |       |           |     |        |        |
|         | Length of body, below handle,  |       | 1     | 2     | 3 metres. |     |        |        |
|         | \$15 00  | 18 00 | 24 00 | 30 00 | each.     |     |        |        |
| 9334.   | Spatulas, of aluminum, blade at both ends.   |       |       |       |           |     |        |        |
|         | Length,  | 13    | 15    | 21    | 25        | 30  | 35     | 40 cm. |
|         | Each.  | .25   | .35   | .50   | .60       | .90 | \$1 00 | 1 40   |

### SPECTRUM ANALYSIS.

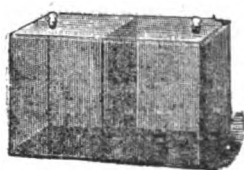
**Spectroscopes, Spectro-goniometers and Spectro-photometers** of all makes imported to order. We shall be pleased to quote prices on application. See also our special catalogue of **Max Kohl's Physical Apparatus**.  
**Spectrum Absorption Cells**, made of clearest mirror glass, luted with a burnt-in enamel which resists acids, alkalis and heat. See also prisms, No. 9301, etc.



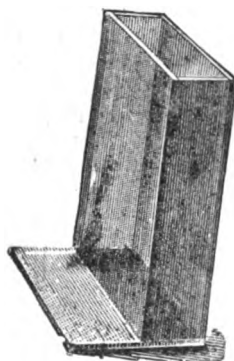
9339



9340



9341



9341a

\* 9339. Absorption Cell, U shape.

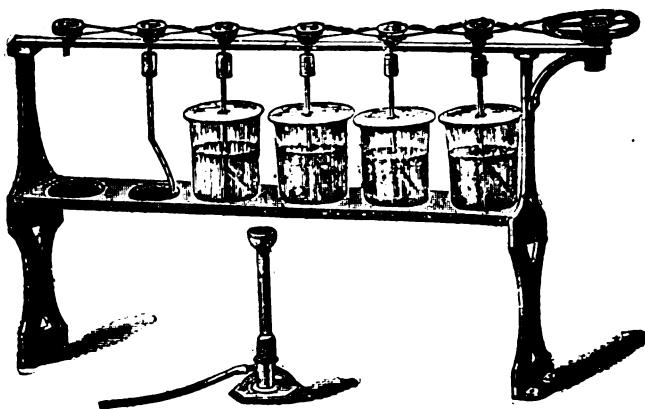
30 x 20 x 4 m.m. inside.....	\$1 25
55 x 20 x 4 m.m. inside.....	1 50

\* 9340. Ditto, ditto, bottle shape, 20 x 4 m.m. inside..... 1 25

\* 9341. Ditto, ditto, double cell for observing two liquids simultaneously, inside measure of each cell, 40 x 25 x 10 mm.....\$7 00

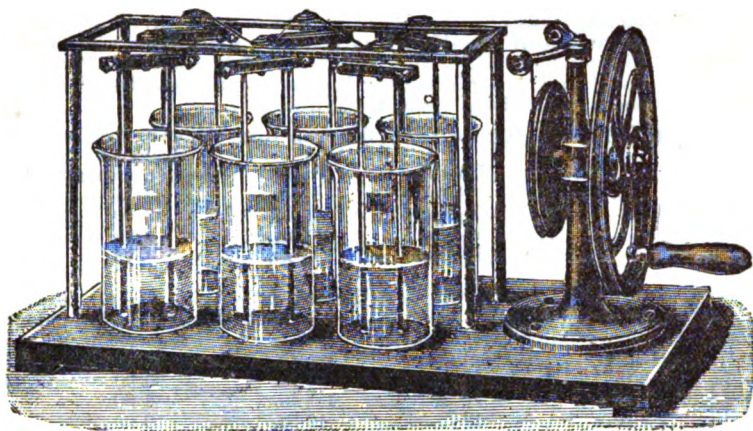
\* 9341a. Ditto, ditto, single cell with extended base, 55 x 35 x 10 mm. inside.... 2 00

9342. Steam bath, of Berlin porcelain; diam., 19½ ctm., height, 18½ ctm., capacity, 1½ litres.....\$4 00



9343

\* 9343. Stirring Apparatus, Blair's, for iron analysis; brass frame; complete with Stirrers, Asbestos Plate, Beakers and Covers .....\$20 00

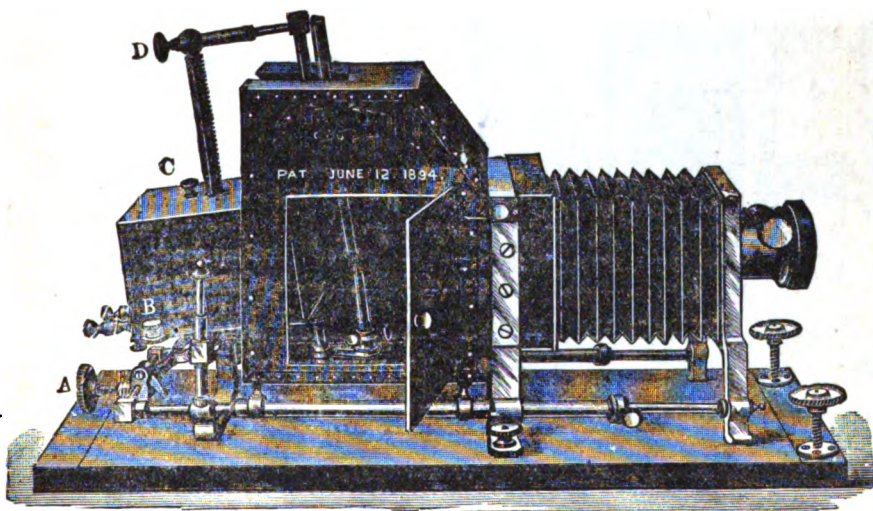


9344

- |         |  |                    |       |
|---------|--|--------------------|-------|
| * 9344. | Stirring Apparatus, for hand or power. | For 6 beakers..... | 18 00 |
|         | " " "                                  | " 8 " .....        | 20 00 |

8	20 00
---	-------

We recommend Motor No. 9273, for operating either of above, when other power is not available.



9345

- \* 9345. Stereopticon Lamp**, for electric light. Price, including a Variable Resistance Coil and Frame.....\$60 00  
This Arc Lamp is designed for use on any low tension continuous current of 115 volts. It possesses all the modern improvements and can be adapted to almost any good magic lantern.

This Arc Lamp is designed for use on any low tension continuous current of 115 volts. It possesses all the modern improvements and can be adapted to almost any good magic lantern.

A For adjusting the lamp to its proper height; B For lateral adjustment; C For regulating the arc according to current or nature of the carbons; D Controlling sliding motion for adjusting upper carbon; E Friction swing joint for adjusting lower carbon.

The lamp movement is enclosed in a metallic casing made of hard sheet brass, highly finished and oxidized; the other parts are nickel-plated. The entire lamp is mounted on a walnut base—size, 4 x 12 inches. Height of lamp to centre of condenser, 6 inches. Weight, about 7½ lbs.

By means of the Resistance Coil, the illumination may be varied from 500 to 2,000 candle power. Size of frame, 15 x 30 inch. Weight, 16½ lbs.

- 9346. **Sterilizers, Arnold's.** These Sterilizers are inexpensive, and maintain an unvarying temperature of 100° C., (212° F.), in all parts of the Sterilizing Chamber without needing any care or attention. The Instrument Sterilizers are furnished with two Perforated Racks, or one Perforated Rack and one Zinc Tray for Sterilizing Instruments in a solution of Carbonate of Soda and water, which prevents their rusting.

**a. General Purpose Sterilizers. Sizes of Sterilizing Chambers and prices:**

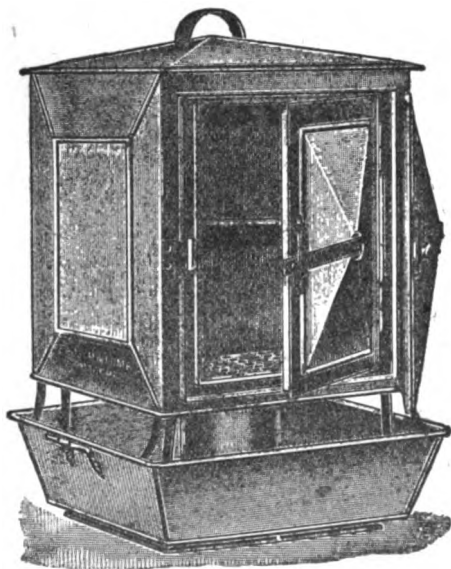
	Height.	Diam.	Heavy tin, copper bottom.	All copper.
No. 22.....	7½ in.	8½ in.	\$2 75	\$7 50
No. 23.....	10½ in.	9½ in.	3 50	11 00
No. 24.....	11½ in.	10½ in.	4 25	13 00
No. 25.....	12½ in.	11½ in.	4 75	14 00

- \* 9346b. **Special Instrument Sterilizers.** Oval in shape. Fitted with two racks, or one rack and one zinc tray. Sizes of Sterilizing Chambers:

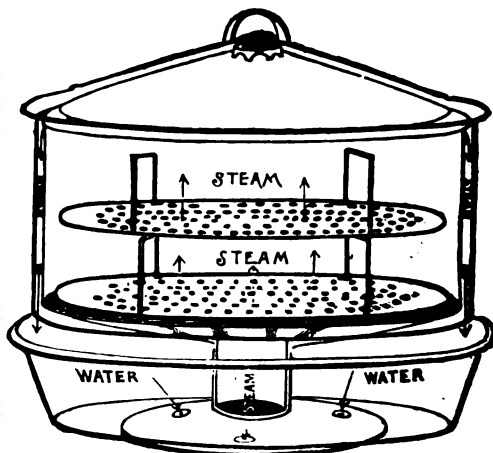
	Height.	Length.	Width.	Heavy tin, copper bottom.	All copper.
No. 44.....	6 in.	14 in.	9½ in.	\$5 00	\$13 25
No. 46.....	7 in.	16 in.	10½ in.	6 00	15 00
No. 48.....	8 in.	18 in.	12 in.	10 00	22 25

**Boston Board of Health Pattern.**

- No. 134. 14x8x8 inch, copper.....\$32 50  
No. 136..16x12x12 inch, copper..... 37 50



BOSTON BOARD OF HEALTH PATTERN.



9346b

- 9346c. Sterilizer, hot air, of iron, double walls, the outer coated with asbestos; inside dimensions 12 x 12 x 12 in.....\$35 00
9347. Sulfitc tubes, for use in paper mills; graduated at ¼, ½, ¾, 1/16 and 1/32 of total contents..... 60 cts.
- 9348. Support, Universal, of aluminum, similar to No. 8328, and consisting of Stand with iron base and Aluminum Rod, 3 Rings, 1 Burette Clamp, 2 Bunsen Clamps and 1 Universal Clamp, all of aluminum, complete.....\$20 00



9349

- \* 9349. Test tubes, with bulb; prevents boiling over and may be laid on the table without contents overflowing. 5 x ½ \$1 00 6 x ¾ 1 50 doz.



## THERMOMETERS.

All our thermometers are made of Jena normal glass, indicated by a thin blue line on the back. Having a well-equipped glassblowing establishment, we can promptly furnish special thermometers to order, of all sizes and styles.

**\* 9350. Mercury Thermometers registering to 550° Celsius.**

These thermometers, which are of the ordinary shape, are manufactured of Jena glass, which does not soften below a temperature of 600° C., and filled with Carbon Dioxide at a pressure of 20 atmospheres. They have an enlargement at the upper end of the capillary, in order to prevent boiling of the mercury below the temperature mentioned.

**a. Normal Thermometers for the Laboratory, with zero point and graduation.**

- 1, reading from 180° to 550° C., in single degrees.....\$10 00  
 — 2, ditto, tested by the "Deutsche Physikalische-Technische Reichsanstalt".....\$24 00  
 3, reading from 100° to 550° C., graduated every 5 degrees.... 9 50

**b. Normal Thermometers for Factories.**

- 4, 1 meter long, including scale, 0 to 550° C., graduated every 5 degrees.....\$15 00  
 5, 1.5 meter long, including scale, 0 to 550° C., graduated every 5 degrees.....\$20 00  
 6, 2 meter long, including scale, 0 to 550° C., graduated every 5 degrees.....\$22 50

The above thermometers for factory use, are supplied enclosed in steel tubes, for protection against breakage, at an extra cost of \$10 00 to \$15 00 according to size.

**9351. Ditto, normal, of Jena glass, milk glass scale, with certificate of the "Deutsche Physikalische-Technische Reichsanstalt," about 55 ctm. long x 13 m.m. diam.**

Celsius, 0°-100° in 1/5°	0°-200° in 1/5°	100°-200° in 1/5°	200°-300 in 1/5°
\$11 20	\$13 50	\$14 50	\$20 00

Ditto, graduated in 1/2° only, \$9 50 each.

**9352. Ditto, normal, according to Anschuetz, length, 12-15 ctm., diam. 6 m.m., milk glass; Celsius.**

No. 1,	No. 2,	No. 3,	No. 4,	No. 5,	No. 6,	No. 7,
-10° to +60°	40-110°	90-160°	150-220°	200-270°	250-310°	300-360° Cel.
Set of 7, as above, in case, graduated in single degrees.....\$26 00						
"	"	"	"	"	1-5	" ..... 30 00
"	"	"	"	"	"	" ..... 33 75

**— 9353. Ditto, Maximum, engraved on stem.**

0°-100° C., in 1/10°.....\$2 00      0°-100° C., in 1/2°.....\$2 50

**— 9354. Ditto, Beckmann's, in 1/100° Celsius, adjustable. Genuine; made under Prof. Beckmann's supervision. For either the Freezing point or Boiling point methods, each .....\$15 00**

**— Ditto, made by Greiner & Friedrich. Each..... 8 00**

**9354a. Ditto, Chemical, engraved on stem, with lense front for magnifying the mercury. Prices, 20% higher than for No. 8285.**

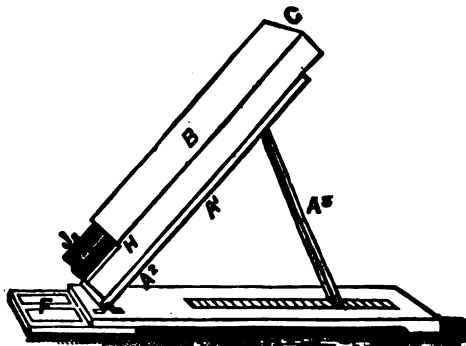
**9355. Ditto, for Incubators; small, graduated in single degrees.....\$3 00**  
**Large, in 1-5 degrees..... \$3 50      In single degrees.....\$3 25**

9350

# TINTOMETER.—LOVIBOND'S PATENT.

## DETAILED LIST OF PRICES.

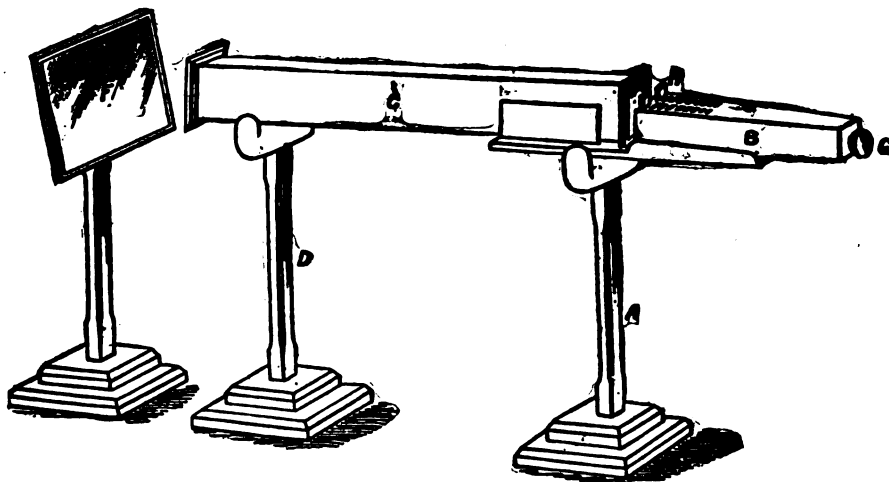
\* 9356. Tintometer, Lovibond's patent, a new instrument for the analysis, accurate measuring and recording of all colors, for which it is claimed, with its permanent equivalent color scales, and its method of expressing the composition of any given color with mathematical precision, that a new power is given to colorimetric investigation. Invaluable to Chemists, Dyers, Brewers, Sugar Refineries and Flouring Mills. The Tintometer consists of a graded series of Standards made of colored glasses, numbered according to their depth of color, and an instrument for holding the glasses and the object to be measured.



9356

- The Optical Instrument, Monocular, old pattern.....\$21 00
  - The Improved Optical Instrument, Combined Monocular and Binocular. 21 00
  - The Improved Optical Instrument, with hot water attachment for liquifying solids below 212 degrees Fahr.... \$37 50
  - The Optical Instrument, Monocular, arranged in close case for factory use to prevent standards from being handled..... \$31 50
  - Color Vision Instrument, No. 1. For simultaneously viewing eight or smaller number of colors.. \$29 00
  - Color Vision Instrument, No. 2. Combined Monocular and Binocular for measuring the difference of light and color perception between the two eyes of the same person. (This instrument can also be used for all general observations for which the improved instrument is suitable). \$26 00
  - Hinged Stand, for any of the above-named optical instruments..... 6 25
  - Extra Support, making the above suitable for cells of any length..... 2 50
  - Rigid Stand with two supports, to take cells up to two feet.... 3 75
  - Rigid Stand with two supports, to take cells up to six feet..... 7 50
  - White Reflecting Mirror for long Troughs..... 6 25
- |   | Glass or Vulcanite. | Silver Plated. | In Brass.     |
|---|---------------------|----------------|---------------|
| — Gauged 2-ft. Metal Trough, with glass ends.....                                   | \$15 00             |                | \$13 75       |
| — Gauged 18-in. " " " " " ".....  | 13 75               |                | 12 50         |
| — Gauged 12-in. " " " " " ".....  | 12 50               |                | 11 25         |
| — Gauged 9-in. " " " " " ".....   | 11 25               |                | 10 00         |
| — Gauged 6-in. " " " " " ".....   | 10 00               |                | 7 50          |
| — Gauged 3-in. " " " " " ".....   | \$3 50              | 9 00           | 6 25          |
| — Gauged 2-in. " " " " " ".....   | 3 00                | 7 50           | 5 00          |
| — Gauged 1-in. " " " " " ".....   | 2 50                | 6 25           | 4 50          |
| — Gauged ½-in. " " " " " ".....   | 2 50                | 5 25           | 4 00          |
| — Gauged ¼-in. " " " " " ".....   | 2 50                | 5 25           | 4 00          |
| — Gauged ⅛-in. " " " " " ".....   | 2 50                | 5 00           | 4 00          |
| — Gauged 1/16-in. " " " " " ".....  | 2 50                | 5 00           | 4 00          |
| — Standard Colored Glasses.....   |                     |                | each, 72 cts. |
| — A Complete Set of Standard Glasses for matching all colors, 470 glasses, \$316 80 |                     |                |               |
| — Cages to hold Standard Glasses in Instrument. ....                                |                     |                | each, 75 cts. |
| — Opaque Glasses for modifying the light.....                                       |                     |                | " 25 cts.     |

- **Diaphragms** for reducing the aperture in special cases.....each, 25 cts.
- **Trays** for powders, and **Blocks** for fabrics.....each, 25 cts.
- **"Presser"** for pressing powders evenly into trays.....each, \$1 25
- **Strong Pins** for fabrics.....per dozen, 25 cts.
- **Thermometer** for taking the melting point of fats, waxes, etc.....\$2 50
- **Pure Plaster of Paris** for white background.....per oz., 25 cts.
- **Strong Polished Box** to contain sets.....from \$5 00 to \$10 00
- 9357. **No. 1.—Set of Apparatus for Dyers and Printers** applicable to liquids and solids, including the Improved Optical Instrument, 5 vulcanite and 5 silvered cells from 1 in. to 1-16 in., trays and presser for powders, 6 blocks, with pins for fabrics, standard white, *without standard glasses*, polished box with stand and reflector.....\$89 00
- 9358. **No. 2.—Set of Apparatus for Fabrics and Solids only**, including the Improved Optical Instrument, box with stand and reflector, trays, blocks, presser, standard white, *without standard glasses*.....\$42 00
- 9359. **No. 3A.—Set of Apparatus for Brewers, Malsters, Sugar and Caramel Manufacturers, Wine and Spirit Merchants**, including the Improved Optical Instrument, box with stand and reflector, 1 in. and 1-16 in. silvered cells, and 20 standard glasses, series 52 and 50.....\$62 50
- 9359a. **Extra Apparatus** for estimating the color of dry malt, 33 standard glasses, with trays, presser and standard white.....\$29 00



9356

- 9360. **No. 3B.—Set of Apparatus for Brewers and Malsters**, including Monocular Instrument, stand, box, reflector, 1 in., 2 in., and 3 in. brass cells, and 53 equivalent standard glasses.....\$90 00
- 9361. **No. 4.—Set for Estimating the Color in Water**, including the Monocular Optical Instrument, box with supports and reflector, 2 ft. and 1 ft. brass cells, *without standard glasses*.....\$66 00
- 9361a. **No. 5A.—Set for Estimating Percentage of Ammonia, in Nessler's Ammonia Test**, including the Improved Optical Instrument, box with standard and reflector, 1 in. glass cell with 30 standard glasses.....\$60 00
- 9362. **No. 5B.—Set for Estimating Carbon in Steel**, including the Improved Optical Instrument, box with stand and reflector,  $\frac{1}{4}$  in. glass cell and 34 standard glasses, series 52 and 26 glasses series 50.....\$80 00
- 9363. **No. 6.—Set for Estimating the Color in Oils, Waxes, Lards, and other Fats, Varnishes, Gelatine, Scale, and all similar substances**, including the Improved Optical Instrument, fitted with hot water apparatus for melting solids, with thermometer for taking their melting point, box, 1 in.,  $\frac{1}{2}$  in. and  $\frac{1}{4}$  in. silvered cells, *without standard glasses*.....\$67 50

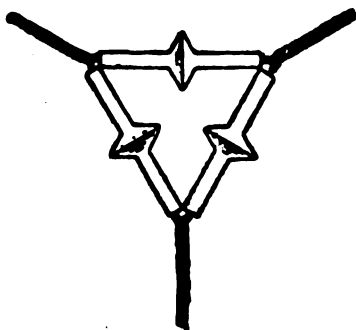
- 9363a. Additional Cells for Water, White Oils, and other light colored liquids, 24 in., 12 in. and 6 in. cells, with extra stands ..... \$42 50
- 9364. **No. 7.—Set for Standardising Merchantable Petroleum**s, including the Monocular Optical Instrument, box with stand and reflector, 18 in. cell (silvered), 4 special standard glasses for water white, standard white, superfine white, and prime white ..... \$55 00  
 Additional Apparatus for intermediate, Russian, and Lubricating Oils, containing 1-16 in. silvered cell, and 5 additional standards ..... \$16 00
- 9364a. **No. 8.—An Investigator's Laboratory Set** for all purposes, including the Monocular optical Instrument, in plain box, with stands and reflector, 24 in. and 12 in. brass cells, 2 in., 1 in.,  $\frac{1}{2}$  in.,  $\frac{1}{4}$  in., 1-16 in., brass or vulcanite cells, one capillary film holder, 6 blocks, 6 trays, presser for powder, and standard white, *without standard glasses* ..... \$156 00
- 9364b. **No. 9.—Set for Estimating the Value of Flour**, including the Improved Optical Instrument, standard white, 6 trays, pressing apparatus, and 90 standard glasses ..... \$105 00
- 9364c. **No. 10.—An Educational Set** for demonstrating the color composition of white light by the absorptive method, containing a stand to hold the glasses in position for demonstrating, with wings and top preventing lateral reflection, with eighteen standard glasses in a sectional tray, and diagrammatic illustrations. The whole shutting up in a compact form when not in use .... \$30 00  
 This set is also available for demonstrating the scientific theory of color and color nomenclature.
- 9364d. **No. 11.—Color Vision Set**, including Color Vision Instrument No. 1, box, stand and screen ..... \$73 50

Special sets for measuring the color of percentage solutions or pathological fluids. Also special sets for photo-metrical purposes, enabling the observer to compare the illuminating values of different colored lights; prices on application.

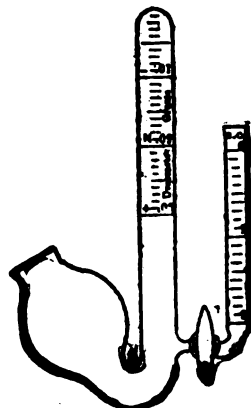
**Tested Materials,** by which students can check their early observations.

- |   |   |                  |           |
|---|---|------------------|-----------|
| — | Slips of Colored Glass, with correct color reading.....         | each,            | 60 cts.   |
| — | Solutions, Fabrics, or Powders, with correct color reading..... |                  | 75 cts.   |
| — | Forms for recording color measurements.....                     | per book of 100, | \$1 25    |
| — | " " " " .....   | "                | 250, 1 75 |
| — | " " " " .....   | "                | 500, 3 00 |

NOTE.—Estimates given on application for cells and capillary films, and also for special apparatus not quoted in the above list.



9365



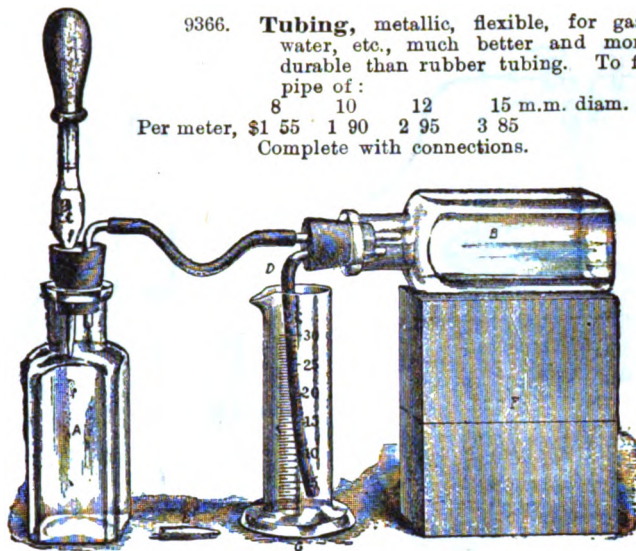
**9367a**

- \* 9365. **Triangles**, pipe stem, new form. The projections on the sides allow the crucible to receive the flame on nearly its entire surface, effecting an economy of 25 per cent. in the gas and time consumed as compared with the old style.
- |                      |         |            |         |
|----------------------|---------|------------|---------|
| Large or small, each | 10 cts. | Dozen, net | 85 cts. |
|----------------------|---------|------------|---------|

9366. **Tubing**, metallic, flexible, for gas, water, etc., much better and more durable than rubber tubing. To fit pipe of:

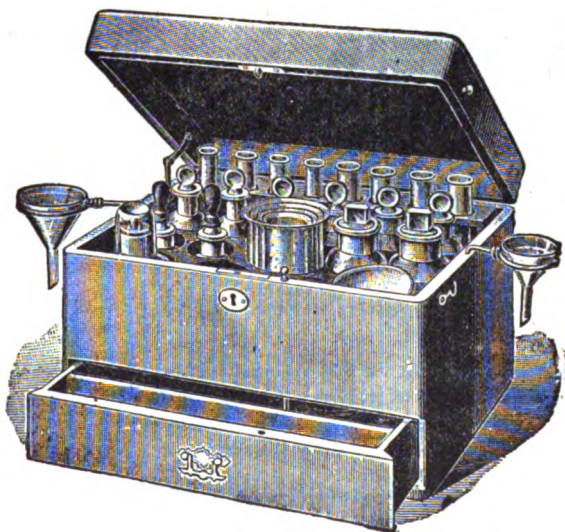
8	10	12	15 m.m. diam.
Per meter, \$1 55	1 90	2 95	3 85

Complete with connections.



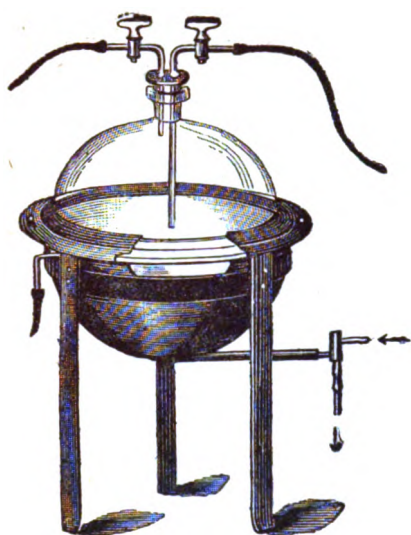
9367

- \* 9367. **Urea Apparatus**, Squibb's, complete with directions for use. ....\$2 50  
 \* 9367a. **Ureometer**, Doremus', improved by Hinds, gives more exact results than the original form, as the 1 CC. of urine required for the test is delivered with greater accuracy and no N escapes from the bulb, \$4 00; on glass foot. . \$4 50

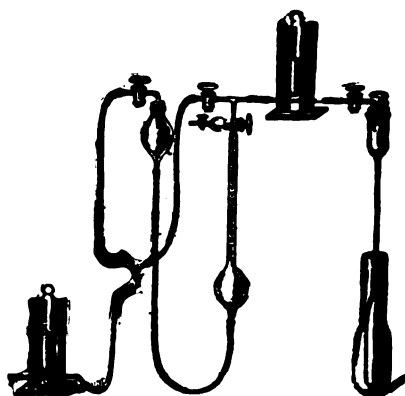


9368

- \* 9368. **Urinary Apparatus**, set of, in polished mahogany case, with drawer; size of case,  $10\frac{1}{2} \times 7\frac{1}{2} \times 6\frac{1}{2}$  in., containing:
- |  |  |
|--|--|
| 6 Reagent Bottles, Glass Stoppered.            | 1 Glass Spirit Lamp.                                   |
| 2 Reagent Bottles, with Pipette Stoppers.      | 1 Porcelain Evaporating Dish.                          |
| 2 Salt Mouth Reagent Bottles, Glass Stoppered. | 6 Small Glass Evaporating Dishes.                      |
| 4 Beaker Glasses, Nested.                      | 2 Glass Funnels.                                       |
| 12 Test Tubes, Assorted Sizes.                 | 1 Glass Stirring Rod.                                  |
| 1 Test Tube Rack.                              | 2 Wire Holders for Funnels, etc.                       |
| 1 Test Tube Holder.                            | 1 Pack White Filter Paper, 100 sheets.                 |
| 1 Test Tube Brush.                             | 1 Screw Capped Vial, containing Litmus Paper, Neutral. |
| 1 Urinometer with Glass, in Case.              | 1 Pair Pincers for holding Litmus Paper.               |
| 1 30 Minim Graduated Pipette.                  | 1 Sheet Gummed Labels.                                 |
| Price, complete .....                          | \$10 00  |



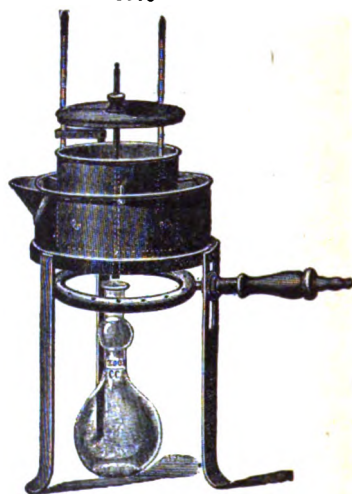
9369



9370



9370a



9371

- \* 9369. **Vacuum Pan**, for liquids which attack metals; a copper kettle with constant water level, into which fits a porcelain dish of 2 litres capacity and 26 cm. diam.; on the rim of the dish a glass cover fits air-tight. Complete with rubber stopper and two glass stopcocks. . . . . \$50 00

A very practical apparatus for experimental purposes.

- \* 9370. **Vapor Density Apparatus**, La Coste's improved by Anschuetz, for determining vapor density of liquids of high boiling points, under diminished pressure; complete with two manometers. . . . . \$27 50  
Without manometers. . . . . 15 50

- \* 9370a. **Vessel**, of glass, parts luted together by burnt-in enamel which resists heat, acids and alkalis, for immersing micro slides; with 6 partitions for slides, \$4 00

- \* 9371. **Viscosimeter**, Engler's, gold plated inside; complete with Graduated Flask, new style, with ring burner, 2 fine Thermometers and German Government Certificate of accuracy. . . . . \$30 00







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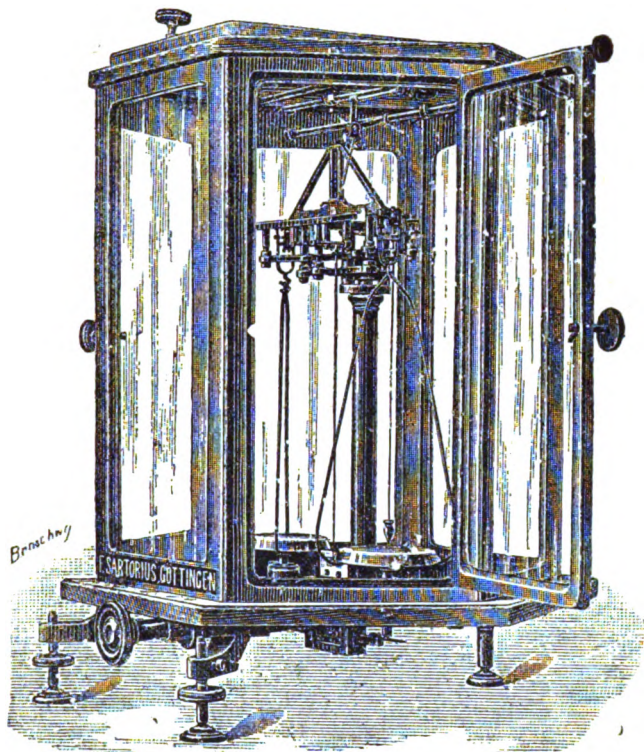
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9012a.

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